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EFFECTS OF STRESS MANAGEMENT TRAINING ON CHILDREN

by

© Lucille Bristowe

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance a thesis entitled EFFECTS OF STRESS MANAGEMENT TRAINING ON CHILDREN submitted by Lucille Bristowe in partial fulfilment of the requirements for the degree of Master of Education in Counseling Psychology.

It's supposed to be a secret,
but I'll tell you anyway.
We doctors do nothing.
We only encourage the doctor within.

- Albert Schweitzer

ABSTRACT

This study was based on the premise that there are children within any school system who could benefit from a program designed to help children deal with the everyday stresses in their lives, both from a preventive and a corrective perspective. The primary purpose of the study was to evaluate two stress management programs, Peace Harmony and Awareness and Kiddie QR, which are both designed for children, to assess their possible value as part of a counseling and/or affective health program within the schools. The specific purpose was to determine if the two programs were comparable in achieving their goal. A subsidiary purpose was to determine if there is a relationship between manifest anxiety and self-esteem. The Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory were used as both pre and post treatment measures.

The sample consisted of thirty-six grade two children from one elementary school within the Edmonton Public School System. The children were randomly divided into three groups: two treatment and one control group.

It was hypothesized that: the treatment groups would show greater decrease in manifest anxiety and greater increase in self-esteem than the control group; that gains in experimental groups one and two would be similar; and that there would be a relationship between manifest anxiety and self-esteem.

Data Analysis confirmed the relationship between manifest anxiety and self-esteem, but significant differences were not found when the two experimental groups were compared with the control group.

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TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

TABLE OF CONTENTS CONTINUED

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

In an elementary classroom, that could be anywhere, a young boy sits quietly at his desk, staring out the window, completely oblivious to all that is happening around him within the classroom. He seems to be unaware also, of the things to see outside, for he's not really looking at them. He was aware this morning though, that the red and white T-shirt he has on, the one with the three big holes in front, is the same T-shirt he wears everyday. He just finds it by himself in the morning. It's always there - right beside the running shoes that pinch his growing feet.

Today should have been a good day: for at his house last night, it was his turn to sleep in the only bed. It should have been a good day. But last night didn't turn out the way it was supposed to; nor did it again this morning, at his house - before he left for school. And as he sits and stares, he is completely unaware, as any little boy would be, of the effects that his hungry tummy, lack of sleep, and sad unhappy feelings are having on his body.

There are many such little children in all our classrooms. They may not be so obvious, but they're there.

Stress is an everyday fact of life for all, and the school setting is no exception (Lupin, 1977). According to Selye (1974) stress cannot and should not be avoided, but should be used productively to enhance our lives. Too much stress if improperly handled leads to distress with resulting tension and anxiety. "Tension is necessary to

accomplish many tasks but unproductive tension, like driving with the brakes on, can distort and eventually damage tissues of the body even if pain is not present" (Payne & Reitano, 1977, p.III-5). Spielberger (1975) noted that what is common in anxiety is its lack of referents, and its projection to the future. "What concerns us here is the extent of 'dis-ease' in the community" (p.5). He further noted that to define anxiety is difficult. "Although anxiety is the most pervasive psychological phenomenon of our time...there has been little or no agreement on its definition" (p.118). Banks (1978-b) supports the pervasiveness and unpleasantness of anxiety:

> The brother of anxiety is worry....Worry and anxiety go together....It is the most common sickness in the world....no one escapes (p.24)....Worry is an emotional attitude accompanied by unpleasantness....It is the product of prolonged frustration, doubt, conflict, and chronic anxiety rooted in fear (p.25).

A tension is present, and unreduced, in unsolved conflicts and frustrations for which there is no immediate adaptive behavior. Worry itself is a form of adjustment; not a constructive one, but an attempt nevertheless.

Stroebel (1980) said of his childhood, "As a kid...I worried about my worries, and in retrospect this made everything even worse. I privately thought I was the only kid with those worries" (p.2). Kids are told 'don't worry about it'. However, Stroebel concluded:

> But kids do worry about it! I asked a six year old about worries. "Daniel", I said "Do you think little kids worry?" And with the gravity of a seasoned adult, he explained, "Oh yes, kids worry - yes, kids worry." It is not uncommon for children to have fears and worries (p.6).

As a medical doctor, Stroebel (1980) has estimated that up to 70%

of all medical complaints are stress related disorders: related to peoples inability to manage the many distresses in their lives. Sour attitudes towards life may produce physical discomfort. They cause tenseness, anger, and unhappiness. Misunderstandings arise from tired minds and tired bodies with both adults and children. "We over react and try to justify our behavior by claiming we're sorry, not sure what's the matter, that we feel tense and anxious" (p.10). Most of us are too busy with 'the outside of our world' and we neglect 'our inside world'. Stroebel was asked by a child, "How old will I be when my body starts to fall apart?" (p.7). The question is very real and serious to a child. Children are surrounded by our adult psychosomatic illnesses and bathrooms so full of adult 'patch up' medicine and tranquillizers that there is little space for bathtub toys.

Payne and Reitano (1977) point out, 'we create our own reality': We learn to be the way we are. Once an adverse conditioned response is learned and generalized the individual is always on automatic, continually reacting adversely to every stimulus around him. However, we can unlearn, or override many of our automatic responses and come to have more consciousness over our behavior. "Each of us is in charge of his or her own state of being,...and have the remarkable capability to learn to be other ways" (Pion & DelliQuadri, 1979, p.102).

The mind-body interaction is supported in current literature. We now know that mental processes influence our physiological response (Brown, 1974). Every change in our conscious or unconscious mental-emotional state is accompanied by an appropriate change in our physiological state, conversely the opposite is true (Green, Foundations of Biofeedback Practice, 1979). We think, imagine, or

remember, and our nervous systems react - the imagery is sufficient: Truly we are run by our imaginations (Payne & Reitano, 1977). It is this mind-body interaction that makes possible psychosomatic illness 'and' psychosomatic health.

Often, when considering health, the influence of the mind is omitted, or ignored. Judith Green (Foundations of Biofeedback Practice, 1979) has postulated, "Could it be that the gradual decay of self-image that we are experiencing nationally and individually is correlated, if not causally related, to the gradual decay of the mind-body hyphen in public and private consciousness" (p.1-102). By mind-body hyphen, Green referred to the 'awareness of the interaction' between the two. To support her position that integration of mind and body should begin 'before' they get out of step she made reference to Dr. Green:

> As Dr. Green and his colleagues point out, many millions of dollars are spent in physical education programs for training the voluntary nervous system, particularly the striate muscles, while the system that poses the greatest threat to health goes unattended. Why not include programs for training the 'involuntary' autonomic nervous system.... Students could practice simple exercises... learning early in the game how mind and body are coordinated. Training in psychosomatic health would focus on bringing into consciousness psychological stress and physiological reactions to stress, and on the alleviation of stress and the bodies habitual response through relaxation (p.1-102).

The dropout phenomena can have its beginnings as early as kindergarten. Without adequate and appropriate intervention, the child is truly at the mercy of his adverse mind-body intervention, and functions on automatic.

> Dr. Lendell Braud suggests that if mental and physical relaxation are taught and used before adolescence, along with remediation of learning

> disabilities, many of the long term emotional and behavioral problems of hyperactive children (including juvenile delinquency) could be minimized (Lupin, 1977, p.5).

White, an experienced teacher, has perhaps said it best. She had amongst her pupils a murderer, an evangelist, a thief, and a man who finally spent his life in a state asylum. In retrospect, she has said:

> I taught them all....All of these pupils once sat in my room, sat and looked at me gravely across worn brown desks. I must have been a great help to those pupils - I taught them the rhyming scheme of the Elizabethan sonnet and how to diagram a complex sentence (Banks, 1978-b).

Battle (1981) noted that "merely emphasizing cognitive development was not enough....in order to assist pupils in developing their potential to the fullest, we must attend to 'both' cognitive and affective student needs" (p.5). Teaching includes more than reading, writing and arithmetic (Lupin, 1977; Stroebel, 1980). Giving children a strong sense of self-worth is also teaching in every sense of the word (Lupin, 1977). Psychologists present different definitions of self-esteem, but most agree that it is a subjective and multifaceted evaluation of an individual's perception of self-worth (Battle, 1978).

To expand a child's feelings of 'worth' is perhaps the greatest asset we can give him, both for the present and for his future. To feel good about one-self is at the root of all our success. It provides the courage to step forward and 'try', and within each individuals personal limitations the successes of our life bread further success - for they are self-reinforcing.

Thus, the 'wheel' of feeling good about self (F/G), courage to try (C), and success (S), is set into motion. If goals are realistic, success can usually be assumed.

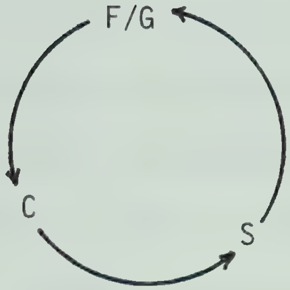

Figure 1 Success Model

Sound 'affective health' is the basis of all our well-being. Traditionally the most influential educators of 'health' (both Physical and mental) are families and schools. However, from these well meaning sources children often learn to expect to be sick, and expect that the doctor can 'fix-it' (Pion & DelliQuadri, 1979). What if health education was about learning expectations of health, and how to enhance well-being? "Fundamentally, the purpose of education is to guide children (and adults) to their fullest development" (p.99). Pion and DelliQuadri suggest an approach that enhances the physical, mental, and spiritual well being. Spirit is that 110% effort that allows a child to learn to walk despite repeated falls. "It's expecting the best and believing the best can happen....Positive emotions...exert a powerful, though undefined, force" (p.101). "Choosing the thinking, feeling, and doing behaviors that contribute to our health pleasures rather than our health problems is the nitty-gritty of being well" (p.102).

Children as well as adults can choose and learn new behaviors, and adopt new attitudes, once they realize that 'choice' is available. It is this 'awareness of choice' that is crutial to learning.

The Problem

Children have worries and stresses in their lives, and sometimes encounter experiences that devalue personal worth. A child's body

reacts physiologically to tension in the same manner as an adults. Therefore, they also need some way to counter the negative effects of stress. Often a childs worries seem trivial to adults, but they are very real to the child involved. Then again, some children have worries and anxieties that are rooted in very traumatic experiences. In either case the child needs some way, that he can employ on his own, to help regain his own homeostasis when the balance of his system is threatened. Children tend to believe that life depends on what other people do 'to' and 'for' them, and do not realize, unless taught so, that there is often much they can do themselves to make their own life more comfortable.

A counselor's time, within the school system, is valuable. There are many children within the system who are in need of counseling services and the counselor:student ratio is high. Counselors are often involved in crisis intervention - after the fact counseling - which is even further time consuming. Teachers are busy, their day filled with curriculum, and they are often unaware of the traumas in some children's personal lives.

Schools need more practical ways to utilize counselor time, when dealing with children's anxieties in todays busy, pressured society.

With the above considerations in mind - that children experience worries and anxiety as a result of the stresses in their lives, and are sometimes exposed to situations that devalue self-esteem and self-worth - the obvious question is: What can be done about it? Is there a suitable way to teach children how to cope with such stress? Would a counseling or affective health program based on relaxation and/or visualization and imagery be successful in reducing the negative

effects of stress in children? Would a preventive program help reduce the need for crisis intervention? Perhaps stress management training designed for children would answer some of these questions.

Purpose

The primary purpose of this study was to evaluate two stress management programs, that help children discriminate between tension and relaxation states, to determine their possible value as part of a counseling and/or affective health program in the elementary schools. Both programs are treatment programs designed as preventive health care, and both teach children stress management, each using a somewhat different approach. The authors propose that the programs are effective in reducing tension and improving the child's good feelings about himself. The specific purpose of the study was to evaluate the programs, Peace Harmony and Awareness, developed by Lupin (1977), and Kiddie QR (Quieting Reflex), developed by Stroebel, Stroebel, and Holland (1980), to determine if the two programs are comparable in achieving their goals.

The present study explored the effects of Peace Harmony and Awareness, and Kiddie QR, by using the Revised Form of the Children's Manifest Anxiety Scale revised by Reynolds and Richmond (1978), and the Culture Free Self-Esteem Inventory developed by Battle (1981), as pre and post treatment measures to determine the effects of treatment.

Both treatment programs are didactic in nature, in that they teach awareness of tension, and also corrective in that they teach means to deal with the tension. Many writers propose that the awareness of tension and ones emotional states presupposes dealing effectively with them (Stroebel, 1980; Lupin, 1977; Banks, 1978; Payne & Reitano,

1977). A changed attitude and changed way of thinking can be the way to a more peaceful, meaningful existence.

Peace Harmony and Awareness, and Kiddie QR, are both easy and appealing programs to use and are designed to be used by counselor, teacher or parent. They are preventive in nature, therefore, offering more efficient use of valuable counselor time. It is possible that regular use of these programs could reduce the need for crisis intervention by the school counselors. Their simplicity and appealing nature make it possible for the teacher to reinforce the concepts throughout the school day, and parent involvement could be encouraged.

A subsidiary purpose of the study was to determine if there is a relationship between self-esteem and manifest anxiety.

Definitions

Self-Esteem: the perception the individual possesses of his own worth (Battle, 1981, p.14).

Anxiety: unpleasant affective state (emotional state), characterized by subjective, consciously perceived feelings of apprehension, tension, nervousness or dread - associated with arousal of the autonomic nervous system (Spielberger, 1972).

Affect: mood, emotions, feelings - considered to be subjective (Spielberger, 1972).

Affective Health: pertaining to emotional health.

Imagery: "An image is a central nervous system aroused mental representation, not necessarily visual, of sensations or perceptions....Imagery is the collective term for images in perception, thought, feeling, memory and

fantasy....Imagery can occur in any sense modality" (Jencks, 1977, p.27).

Visualization: visual imagery.

Relaxation: that state which is directly opposite to the state of tension.

Deep Relaxation: implies total relaxation of body, mind and spirit - induces physiological changes within the autonomic (involuntary) nervous system that are stress reducing.

Quieting Response: a state of deep relaxation.

QR (Quieting Reflex) the Quieting Response is said to become a 'reflex' when practiced regularly for four to six months.

Overview of the Study

The purpose of this study was to explore the effects of two stress management programs for children, Peace Harmony and Awareness, and Kiddie QR, to determine their value as a counseling and/or affective health program within the schools. Thirty-six grade two children from one elementary school in the Edmonton Public School system participated in the study. The children were matched by sex and randomly assigned to one of three groups - two treatment, and one control. All three groups were pre and post tested with the Revised Children's Manifest Anxiety Scale, and the Culture-free Self-Esteem Inventory to assess the effects of treatment.

CHAPTER II

THEORETICAL SUPPORT

The Nervous System

The human body functions as a complex system, which can be viewed as our 'inside world'. However, this inside world must also function within the confines of the 'outside world'. It is this interaction, with all its complexities, that makes life possible. To be healthy the human body requires both the expenditure and restoration of energy. A highly complex nervous system has evolved to initiate those bodily 'states' required for life.

Human responses have traditionally been divided into a dualistic concept, voluntary and involuntary, corresponding to the central nervous system (CNS) and the autonomic nervous system (ANS). The central nervous system (which includes the brain, brain stem, and spinal cord, and their associated nerves), is responsible for those responses that are considered to be voluntary, employing striate muscles (somatic responses) such as moving our limbs. The CNS has a peripheral component, the peripheral nervous system; consisting of sensory nerves which lead from sense receptors to the spinal cord and brain, and motor nerves which govern the voluntary muscles.

The autonomic nervous system, sometimes referred to as the visceral system, controls the smooth muscles such as the internal organs, and has been considered involuntary, occurring automatically without our being aware of it. However, the ANS has components within the central and peripheral nervous systems. Somatic and autonomic

centers overlap within the CNS, and there are probably no centers which are of purely autonomic control.

The hypotholamus is the most important single location for the integration (Jencks, 1977).

The ANS is further divided into the sympathetic nervous system (SNS) and the parasympathetic nervous system (PSNS) which are it's peripheral components. The SNS responses are said to be ergotrophic responses; oriented towards work and the expenditure of energy. SNS responses are elicited by situations which call for an increase in body activity. The PSNS is responsible for trophotropic responses; those responses oriented towards nourishment. It conserves and restores energy and is responsible for states of quiescence. PSNS responses are elicited by a quiet stream of thought, a decreased level of consciousness and muscle tone, and monotony. Both SNS and PSNS activity are influenced by thinking and emotion (Benson, 1975; Jencks, 1977; Pelletier, 1977).

The sympathetic nervous system and the parasympathetic nervous system are opposing in their function. It is their opposing and inhibiting qualities, plus the integration of the mind and body, that is of importance to the stress response and relaxation.

The Stress Response

Stress responses are those responses which are ergotrophic in nature and require a behavioral adjustment on the part of the organism, both at a cellular level, and as seen in overt action.

The stress response can have both a short term and a long term effect on the body, each with its own distinct characteristics. The short term effects of stress were first described by Cannon (1939) as

the 'fight-or-flight' response; long term effects have subsequently been described by Selye (1974, 1978) in his concept of the 'general adaptive syndrome.'

Fight-or-Flight

The fight-or-flight response, which is sometimes referred to as the 'emergency response', was first described by Cannon (1939), a professor of physiology at the Harvard Medical School, in the 1930's, in conjunction with his work on homeostasis: the balanced internal state of our body. Because of the extreme instability of the 'matter' and 'pulses of energy' of which life (the bodily structure) is composed, the Autonomic Nervous System has evolved a means of preserving a constancy of our internal state. It is this process that Cannon called 'Homeostasis'. The homeostatic mechanisms in the body are similar in function to a thermostat, and result in a form of self-regulating from within. A thermostat however, regulates only one function, temperature; whereas homeostasis implies a balance of 'all' systems in the body that are necessary for life. To remain healthy the internal environment must not deviate too far from the norm despite conditions of the external environment. "Mechanisms of homeostasis belong to the general category of protective functions" (Cannon, 1939, p.216).

Protective functions are those special reactions of the organism which are adapted to meet dangers from attack, which might arise from the presence of external agents, such as bacteria, inflammation, and threats to the organisms physical well-being. Cannon believed that the great emotional excitement of fear and anger protected the species by preparing it for action and readying the organism for the demands that

would be placed upon it. Cannon considered pain to be related to fear. He defines fear as the premonition of pain, thus, agents which produce pain cause fear and activate the emergency response, which saves us from repeating acts which might threaten life.

The preparation for action was the arrangement for mobilizing the bodily forces whenever effort was required or anticipated, and involved biochemical changes that increased the availability of fuel, strength and energy levels, and the riddence of waste products. The process became known as the fight-or-flight response: This initial alarm reaction is a basic hereditary mechanism designed for survival on an automatic level. It was necessary for our primitive ancestors to quickly mobilize to survive and reproduce. Natural selection favoured its continuation. Cannon established that in emergencies, all humans will react in the same predictable way.

The fight-or-flight response prepares the organism for the demands that will be made upon it. When the response is evoked the hypothalamus is stimulated, activating the sympathetic nervous system and the endocrine system, thus, producing their associated physiologic changes: metabolism increases; respiration deepens (increases); the heart beats more rapidly; blood pressure rises; blood is shifted away from the stomach, intestines and kidneys to the heart, brain and muscles of the limbs; alimentary canal processes cease; sugar is freed from the liver (as glycogen); the spleen discharges concentrated red corpuscles to carry oxygen and aid riddence of acid waste; perspiration is increased; and muscles contract. Adrenalin is secreted from the adrenal medulla. It is the adrenalin functioning in cooperation with the sympathetic nervous system that calls forth the glycogen from the

liver, distributes the blood in abundance, abolishes the effect of muscle fatigue, and renders the blood more coagulable, thus preparing the organism for action.

The 'emergency response' at first glance seems to disturb homeostasis, but is appropriate when viewed as preparatory for exertion. When an animal is aroused to fight-or-flight a similar biochemical reaction quickly occurs and the appropriate action is taken (fighting or fleeing). Once this neurophysiological stress response has been completed the body rebounds into a state of deep relaxation and ultimately towards homeostasis as the sympathetic nervous system activity subsides (Pelletier, 1977).

Many of modern mans stressors are mental rather than physical, as he is faced with the constant need to adjust. Today's shift in social roles, job insecurity, increasing noise, and decreasing purchasing power of the dollar are mental stressors. Yet, they generate a biochemical response that requires physical activity for completion. Modern man can't always fight or run in response to his anger or fear; the response is turned on, but not allowed an appropriate shut-down. Instead, he tends to stand still (like a car whose brakes and accelerator have been pushed at the same time) unable to alter his outside or inside world. He is beseiged with many constant low-level stressors, and produces a less than maximal response which precludes an effective return to a state of homeostasis (Wilson & Schneider, Foundations of Biofeedback Practice, 1980).

If the response continues, prolonged and unabated, the biochemical changes become detrimental to health. When not used appropriately, and repeatedly elecited, the results may lead to actual

disease. Cumulative effects occur, which lead to the stage of resistance, as described by Selye's General Adaptive Syndrome, and depletes adaptive energy.

General Adaptive Syndrome

Selye (1976) describes stress as the nonspecific response of the body to any demand made upon it: whether it is caused by or results in, pleasant or unpleasant conditions. Stress is the totality of the changes, the rate of wear and tear in the body, as it tries to re-establish homeostasis: it is the end result of a process of readjustment. Stress causes certain changes in the structural and chemical composition of the body. It is a state manifested by a syndrome which is nonspecifically induced (can be produced by many agents), as opposed to those states which are specifically induced (produced by one, or a few, agents).

Selye has said that stress cannot and should not be avoided, "complete freedom from stress is death" (1974, p.20). The tensions of stress should be used efficiently and channeled into productive and creative outlets.

To understand Selye's concept of stress it is essential to have a thorough understanding of the difference between his use of the terms 'stress' (which includes increased response to pleasant or unpleasant stimuli) and 'distress'. Selye describes two types of stress: (1) eustress: such as intense pleasure or ecstacy, and (2) distress: an excess of unpleasant stress, and always has negative effects on the body. When normal stress (pleasant or unpleasant) becomes extreme, and the body is unable to cope with it, it becomes distress. It is the distress, and its intensity, that we are concerned with here: the

damaging effects of stress. "It is immaterial whether the agent or situation we face is pleasant or unpleasant; all that counts is the intensity of the demand for readjustment or adaption" (1974, p.15). Intense joy or sorrow are opposite emotions, yet the stress effect on the body (the nonspecific demand to readjust) is the same. For example, a heart attack can occur in response to extremely good or bad news.

Also important to Selye's concept is his use of the terms 'stress' and 'stressor'. The stressor is the agent or condition that is acting upon the body; stress is the end result, the biochemical changes that occur as a result of the body trying to restore homeostasis.

Specific to Selye's theory is the involvement of the hypothalamus - pituitary - adreno - cortical axis, a coordinated system, which Selye believes probably participates in many disease phenomena as well as in homeostasis.

In 1926, Selye, then a medical student, noticed that patients with very diverse diseases had many signs and symptoms in common. Plus, they had a common, characteristic 'appearance' of illness irregardless of its nature: Selye described this as the 'syndrome of just being sick'. He then questioned: What were these 'nonspecific signs' of illness? Could this general syndrome of illness be treated before it progressed to specific disease symptoms?

He found his answer ten years later while working with hormones and rats: he discovered consistant physical changes as a result of damage. Irrespective of the injected substance, all produced a stereotyped syndrome. Three types of changes (a triad) occurred: (1) enlarged adrenal cortex, (2) thymicolymphatic changes: shrinking of the thymus and all lymphatic structures, lymph nodes and spleen, plus

diminished lymphocytes, and eosinophil (white) blood cells, in the blood. (3) deep ulceration of the stomach or duodenum appeared.

Selye called the triad the 'damage syndrome': syndrome meaning they were interdependent, and always occurred together. There also occurred loss of body weight, derangement in the regulation of body temperature, and chemical alterations in body fluid and tissues.

The cause of the triad, Selye explained, was the action of the hypothalamus - pituitary - adreno - cortical axis: The stressor excites the hypothalamus, which stimulates the pituitary to discharge adrenocorticotrophic hormone (ACTH) into the blood. The ACTH induces the adrenal cortex to secrete corticoids which elicit the thymicolymphatic atrophy. The production of ulcers is facilitated through the increased production of corticoids, but the autonomic nervous system can also play a direct role in the production of ulcers. In summary, the discharge of ACTH, the presence of corticoids, plus the appearance of the triad constitutes a stress response.

The exact nature of how the signal reaches the hypothalamus to initiate the alarm is unknown but Selye has said there are only two coordinating systems - the nervous system and the blood vessel system - to facilitate the action. Selye notes that it is equally possible that the alarm signal is either triggered by a substance or a lack of one.

Selye found that the triad developed in three distinct phases over time, which he described as: "at first, the experience is difficult, then one gets used to it, and finally one cannot stand it any longer" (1974, p.22). During stage one, the Alarm Reaction phase (AR), there is the appearance of the acute manifestations - the triad. This is the call to arms of the defense force within the organism,

which is always proportional to the intensity of the aggression.

If the organism was not killed by the Alarm Reaction stage, and if the stress response continued, the organism entered stage two: the Stage of Adaption or Resistance (SA/SR). No living organism can be maintained continuously in a state of alarm; if survival is possible the organism must adapt. The resistance now rises above normal and there is a disappearance of the acute manifestations; the body's structural and chemical changes return to near normal. During this second stage, adaptive energy is called upon, and the defense mechanisms operate to attack or establish coexistance (passive tolerance) with the stressor. The organism can withstand even greater stressors now, yet eventually the acquired resistance is lost and exhaustion (stage three) sets in.

During the Stage of Exhaustion (SE) the organism is incapable of survival at normal resistance levels, and death follows. Symptoms similar to those of the Alarm Reaction reappear.

The stereotypic, triphasic response (AR; SA/SR; SE), to any diverse agents of distress, Selye called the 'biological stress syndrome' which later became known as the 'General Adaptive Syndrome' (G.A.S.) and is the core of Selye's work on stress.

Selye has equated his triphasic G.A.S. response to life generally: (1) stage one - childhood: with excessive responses to any stimuli, (2) stage two - adulthood: when adaption occurs and resistance is increased, and (3) stage three - old age: with its irreversible losses of adaptability and exhaustion sets in.

After the initial alarm phase, the body begins to resist, however, since the body can resist or withstand stress just so long,

the length of the resistance depends on (1) the body's innate ability to adapt (deep adaptive energy), (2) the intensity of the stressor, and (3) conditioning factors.

Adaptive energy is the energy that is consumed during stage two: its consumption leads ultimately towards death. Again, Selye has a dual concept: he differentiates between 'superficial' and 'deep' adaptive energy. Superficial adaptive energy is that energy which can be restored, after exhaustion, by rest or a good nights sleep: it is renewable. Deep adaptive energy, however, is non renewable and finite in quantity: once used, a portion of the total is lost forever. Selye believes that each person inherits at birth a predetermined quantity of Deep Adaptive energy, which is consumed and eventually runs out: hence, old age. Selye compares deep adaptive energy to a candle and cites the old cliché: You can burn your candle from both ends, or use it wisely, conserving it for a longer lifetime. No two people inherit exactly the same quantity of deep adaptive energy, it is an individual reservoir.

Selye has said the intensity of the alarm response (the initial call to arms) is always proportional to the intensity of the aggression. He uses a 'fire alarm' metaphore to explain intensity; it depends on whether the call is a one alarm call, three alarm, or more. The greater the need, the more intense the reaction.

Selye noted that (1) "Qualitatively different stimuli of equal toxicity (or stressor potency) do not necessarily elicit exactly the same syndrome in different people", and (2) "Even the same degree of stress, induced by the same stimulus, may produce different lesions in different individuals" (1974, p.33).

Each stressor brings to the final response its specific and its

nonspecific effects. These in turn are influenced by the organisms internal conditioning (eg. hereditary factors, past experience) and external conditioning factors (climate, drugs, diet): both of which determine sensitivity, and can cause stress to be well-tolerated or to be pathogenic.

It is the stage of resistance and the depletion of the deep adaptive energy that is of concern in a prolonged stress reaction. The inability to adapt, with its suppression of the immune system, leads ultimately towards lethal diseases of adaption; the weak links of our body, determined by our individual predisposition to disease, break down under stress. Selye believes the derailment of the G.A.S. mechanism to be an inherent element of all disease.

Selye's theory also incorporates a Local Adaptive Syndrome (L.A.S.) which occurs at the cite of an aggressive agent or stressor (eg. inflamation, injury, damage, etc.). The L.A.S. is of interest here only in its relation to the G.A.S. A close interaction exists between the L.A.S. and the G.A.S. via the endocrine and nervous system. A primarily local stress, if sufficiently severe, can elicit a G.A.S. response, which in turn has an influence back upon the L.A.S. For example: the branching effect of pain (a stressor) increases the intensity of the response and may trigger a G.A.S. response.

In summary, stress is not merely nervous tension: although nervous tension, frustration, and emotional reactions can elicit a stress response. Stress according to Selye involves the appearance of the 'triad', the incorporation of the time concept (the long term effects), and the consumption of deep adaptive energy. Stress manifests itself as a "specific syndrome, yet it is nonspecifically induced"

(Selye, 1976, p.66).

Summary

Budzynski (Foundations of Biofeedback Practice, 1979) describes stress as a hyperarousal state of one or more physiological systems. The stress response is the body's normal way of preparing when effort is required or anticipated in threatening situations. The stress response becomes maladaptive when: (1) it is elicited to frequently, (2) it is sustained too long, (3) there is delayed recovery to relaxed levels after stress, (4) it results in decreased performance, (5) it leads to stress related disorders, and (6) when the final stage of vigorous motor activity is lacking (p.4-60).

Budzynski cites McQuade and Aikman; "the basic cause of much twentieth century disease is a shadow which has slowly darkened our lives, like the smog that has darkened our cities. This shadow is stress" (Foundations of Biofeedback Practice, 1979, p.4-60). Pelletier has stated that "incessant sympathetic arousal is a correlate of anxiety states and is implicated in stress related disorders" (p.192). Wenger and Cullen (1972) studied resting autonomic patterns of Air Force cadets during World War II, which were followed up approximately fifteen years later: these individuals with apparent sympathetic nervous system dominance produced a greater incidence of stress-linked disorders over time, than those individuals who reflected apparent parasympathetic nervous system dominance (Budzynski, Foundations of Biofeedback Practice, 1979). Stress is a disequilibrium of the body which makes it more vulnerable to disease.

Green and Green (Basmajian (Ed.), 1978) point out "psychosomatic disease is, by definition, a medically undesirable physiological

response to psychological stress. It is not in the head, but in the body, contrary to public opinion" (p.157). They conclude that some stress adds spice to life, and state that it is not stress that kills us but our reaction to it. They give the following examples to illustrate their point. A skier at the top of a slope, anticipating the ski down, would have increased sympathetic nervous system activity which would be pleasurable (eustress). If, however, when he reached the bottom he was sufficiently frightened by what almost happened that his increased nervous system activity did not return to normal (distress) he then has the beginnings of a psychosomatic disease.

Stress, which is accompanied by generalized increases in arousal of the sympathetic nervous system activity, is normal and desirable, to maintain and enhance life. Decreased sympathetic nervous system activity, which allows parasympathetic nervous system dominance, is also desirable if the body is to return to a healthy state of homeostasis. Relaxation is characterized by this parasympathetic nervous system dominance.

Relaxation

Relaxation, produced by whatever means, has physiological effects opposite in nature to those induced by stress: It is characteristic of decreased sympathetic nervous system activity and increased parasympathetic activity (Stoyva, Basmajian (Ed.), 1978). Movement towards deep relaxation is a trophotropic response in which the body receives the nutrition of relaxation (Pelletier, 1977). Relaxation involves more than simply giving verbal instructions to 'relax' (Benson, 1975): It has been described as the shaping of low arousal, and can be acquired, as any motor skill with practice.

Attitudes toward relaxation are naive: relaxation is not loafing, watching TV, reading a book, working in the garden, or sports. While these activities might be relaxing and provide a pleasant deviation, they do not provide the deep relaxation which is associated with reduced autonomic nervous system activity. A person can participate in the above activities and still maintain both mental anxiety and neurophysiological functioning characteristic of prolonged, unabated stress (Pelletier, 1977).

Deep relaxation does not necessarily occur spontaneously, and needs to be learned. Patients are often instructed by their physicians to relax, but they are seldom instructed in 'how' to relax. There are several techniques which elicit the relaxation response, which is associated with deep relaxation. All methods appear to allow homeostasis to be restored. Pelletier stated of deep relaxation, "its neurophysiological characteristics and effects are vastly different from what is achieved by means of alcohol and tranquilizers" (p.26). It is also not the same, physiologically, as sleep (Benson, 1975). Falling asleep while relaxing should be avoided; once asleep, you are no longer relaxing. Benson found that brain-wave patterns are different during sleep than during relaxation. Relaxation and sleep are not interchangeable, nor a substitute for one another.

Progressive Relaxation

Progressive Relaxation is a method of training deep relaxation of the skeletal muscles, that was developed by Jacobson (1938) in the 1920's. Progressive Relaxation developed out of Jacobson's realization that there was a need for a study of the nervous element that appears in a large variety of diseases. Jacobson believed there was a lack of

adequate treatment for what was commonly called 'nervousness'; actually very little was usually done to quiet the nervous system. Jacobson decided that the natural direction to look was to the area of rest, since the 'general remedy' was rest used along with symptomatic treatment of disease. However, the patient who is advised to stay in bed often fails to get the desired results. Jacobson wondered why the 'rest-cure' sometimes failed. Although rest has been a part of medical treatment through the years, there had been very little exploration of the subject in science. Jacobson noticed that during neuroses there is a failure to relax. However, he also noticed that recovery, by whatever means, is characterized by a return to a fairly normal state (of relaxation).

Jacobson decided that what is customarily called relaxation was inadequate to explain his treatment. He needed a definition that would make evident the extreme degree of relaxation which was a systematic, progressively cultivated form of muscle relaxation, that differs from ordinary relaxation. The name Progressive Relaxation was chosen to differentiate the two forms. Progressive relaxation does away with motor unrest in those muscle groups where it has been cultivated. Jacobson has stated that relaxation is incompatable with the contraction of muscles: "to be excited and to be fully relaxed are physiological opposites" (Jacobson, 1938, p.xv).

Jacobson's form of relaxation is progressive in three respects: (1) the individual relaxes a major muscle group, (2) as he learns each new group he simultaneously relaxes parts he has previously practiced, and (3) as he practices from day to day he grows toward a habit of repose. Many people have never observed the difference between

tenseness, nervous excitement, nervous calm and relaxation. To Jacobson the word 'tense' had three meanings; (1) tense, as a contracting muscle when it's fibres shorten, (2) a tense high-strung person, and (3) the sensation of tenseness: the 'X-sensation'. It is the X-sensation that the individual needs to become aware of; he needs to know where tension is (to be aware of internal cues) in order to relax. Highly nervous people have lost their ability to relax and find it difficult to detect tension. They do not know they should relax, and they do not know how. However, an individual must know what muscle groups are tense in order to know where to relax. Jacobson referred to the re-education as the cultivation of 'muscle-sense'. Even when lying down quietly and relaxed, relaxation is not perfect, and there remains a residual tension. Doing away with the residual tension is the feature of Progressive Relaxation. A person can lay in bed for days but still be worried, fearful, or otherwise excited.

There is a need also, to cultivate a mental quiet. Jacobson believed the importance of physiological relaxation had not been fully realized: Because of the reflex connections the nervous system cannot be quieted except in conjunction with the muscular system. Jacobson found that in 'nervous' states, symptoms lessened with the removal of residual tension and a mental quiet was achieved. Progressive Relaxation appears to afford direct routes to the treatment of fears, anxieties, overemotion and other psycho-pathological states. If a patient is shown how to relax his voluntary system, there tends to follow a quiescence of the involuntary system, and emotions tend to subside. One system must become quiet before the other system can become quiet. Many nervous people do not see the value of relaxation

therapy. Relaxing a muscle may seem out of place in treating their nervous troubles. However, Jacobson believes, if the patient will co-operate, even while keeping his skepticism, his observations and insight will usually speak for themselves.

The procedure for Progressive Relaxation is very simple, and Jacobson found it to be suitable for anyone age six and above. The patient is first shown how to recognize tension in the muscles, and is then shown how to relax the muscles. The patient learns to relax the large muscle groups in approximately the following order:

arms
legs
abdomen
chest (respiratory muscles)
shoulders
neck
face
eyes

The patient lies on his back on a bed and begins by tensing his muscles of the particular body part against the resistance of the therapist's hand, which retards the movement. In so doing the patient begins to recognize tension and is shown what 'not to do'. For example, the client flexes his bicepts, notices the sensations, and is then told: let go; continue to let go, past the point that you feel completely relaxed; as limp as a rag.

The client comes to realize that relaxation is the negative of contraction; that relaxation involves no effort. To "go in the negative direction" (p.53) has become the standard direction of Progressive Relaxation. Instructions largely consist of preventing the beginner from doing the wrong thing. Jacobson has said of the muscle contractions used during training; "They are not designed to be an aid to the relaxation and should not be repeated immediately before or

during attempted relaxation" (p.43). The patient does not contract muscles when practicing at home, but merely notices how much tension there is in the body part, and 'goes in the negative direction'. A body part need not be moved to be progressively relaxed. Home practice sessions are to be 1/2 to one hour in length, and practiced daily, or at least 3 - 4 times weekly. The entire process may take many months to learn. The client should not keep his attention on the muscle, is not instructed to stop thinking or to make the mind a blank, and there is no attempt to control breathing. However, Jacobson notes, the client has the 'mental set' to relax. Throughout the day he is to observe his muscular contractions during his daily activities in order to increase his awareness of tension versus relaxation.

Since the lying down position is not always practical, Jacobson also developed a form of "Differential Relaxation" which can be used during everyday activities. Differential Relaxation is usually taught after Progressive Relaxation. The client assumes a sitting position, and reviews the same procedures as those practiced while lying down. Jacobson describes Differential Relaxation as an "economy of the neuromuscular energy" (p.98): "Differential Relaxation accordingly means a minimum of tension in the muscle requisite for an act along with the relaxation of other muscles" (p.83). This form of relaxation can be used during daily activities such as reading, singing, dancing, etc.

Jacobson emphasized that the aim of Progressive Relaxation is not to remain in a totally relaxed state, for some tension is necessary for life. To do away with tension is to do away with living. To be able to relax oneself completely, or partially, when desired and thus rid

oneself of unnecessary tensions is the aim. The goal is to achieve habitual relaxation, while only maintaining enough tension to carry on in dayly functions; to limit excess (residual) tension.

Autogenic Training and Visualization

Autogenic Training was developed by Schultz (Schultz and Luthe, 1959) a German neurologist, in the 1930's, and has been widely used in European psychotherapy. Schultz's Autogenic Training was an outgrowth of Vogt's work with hypnosis, and his investigations into the clinical potentialities of autosuggestive methods for the induction of mental states that were conducive to psychotherapy. Schultz found that those subject deeply hypnotised with suggestions for relaxation reported feelings of heaviness in the extremities followed by sensations of warmth. He concluded that muscle relaxation (heaviness) and vasorelaxation (warmth) are basic to producing a hypnotic state. Drawing on these observations and conclusions Schultz wished to determine if this relaxed hypnotic state could be induced by autosuggestion of heaviness and warmth. He began exploring the potentialities of autosuggestion in an attempt to find a favorable psychotherapeutic approach which would eliminate the unfavourable aspects of hypnotherapy: namely passivity and dependence on the therapist.

From these early investigations, Schultz developed Autogenic Training. To the suggestions for heaviness and warmth, suggestions for the heart and respiration were added. Finally suggestions for warmth in the abdominal region and coolness of the forehead were added because of their soothing qualities. These became the core of Autogenic Training, and evolved into the six "Autogenic Standard Exercises". The end

product was that the individual was able to achieve a deep state of psychophysiological relaxation through passive mental control of neuromuscular and autonomic systems.

Essential to success of Autogenic Training is, (1) a passive attitude, (2) mental contact with the specific body part, and (3) representation of the autogenic formula in the mind (verbal, acoustic or visual). The sensations of relaxation are developed by the repetition of phrases, which serve as cues, keep out intruding thoughts, and maintain mental contact with the body. The individuals passive and casual attitude is one of the most important aspects. A passive attitude implies the attitude towards the functional result to be achieved: it is a form of detachment towards the intended outcome. During 'passive concentration', as Schultz named it, the individual becomes a passive observer of his thoughts and feelings as they appear, and allows them to pass without actively attending to them.

Autogenic Training should be undertaken in a quiet room with soft lighting, to reduce the external stimuli. The eyes should be closed to prevent their active innervation. A choice of three positions are recommended for the training, (1) lying down, (2) a reclining chair posture (with the head supported), and (3) a simple sitting posture (straight backed chair; head and shoulders slimped forward, arms draped over thighs). For best results Autogenic Training should be practiced twice daily for approximately ten minutes, thorough training may take several months.

Directions for Autogenic Training are simple and straight forward, aimed at the functional result wanted, and imply that the relevant system works automatically. The directions emphasize a

passive, casual attitude, not a goal seeking one, and are always worded in the positive. They are always preceded with the repetition of 'I am at peace'. To this mental device a series of six Standard Exercises are added:

I am at peace.

1. my right (left) arm is heavy
2. my right (left) arm is warm
3. heart beat calm and regular
4. it breathes me
5. my solar plexs is warm
6. my forehead is cool

Directions always begin with the dominant arm, which is most active. Formula one and two are generalized to all limbs and then the whole body before going on to the next formula. The individual remains with each formula until it is thoroughly mastered before moving on. Each formula is added to the preceding ones until all six are given together. Each group of formulas that the client is developing is referred to as a series: eg. a beginner's series would be only formula one, another individual's series might be formula 1, 2, 3 and 4, whereas a more advanced individual's might be formulas 1, 2, 3, 4, 5 and 6. Each series of the formulas is completed successively with a one minute rest between series. After each brief period (a series) of concentration the person comes back to normal with the following 'Cancellation Technique': (1) flexing arms and legs vigorously, (2) breathing deeply, and (3) opening the eyes. The Passive Concentration on each area should be brief, no more than 30 - 60 seconds initially. They should never exceed 90 seconds even for beginners; if so, it may prove difficult for the client to transfer the skill to everyday circumstances. The aim, ultimately, is for brief periods of passive concentration to initiate the intended physiologic change in a reflex-

like manner. One complete series of the six exercises by an advanced trainee should be completed in two to four minutes; hence, the ten minute session for three series, to be practiced twice daily.

To the Standard Exercises, Schultz has added two supplementary formulas: Organ Specific and Intentional formulas, which are designed to be corrective with regards to specific areas or concepts. Organ Specific formulas are added for certain pathophysiologic requirements (eg. warmth makes me sleepy. It sleeps me.), whereas Intentional Formulas are designed to influence certain mental functions (eg. body weight does not matter, or defeat does not matter, I choose a positive approach). Both Specific Formulas are combined with the Standard Exercises.

Once the individual has learned to relax on the physical level, there are seven Meditative Exercises employing imagery such as, visualizing colors, shapes, objects, scenes and feelings, that can be learned for the advanced trainee.

Autogenic Training is said to increase bodily resistance to all kinds of stress, because it affects autonomic regulation. The 'autogenic-state' is described as a pre-sleep state: a trophotropic state. The tranquilizing and sleep-promoting effect of the exercises may be enhanced by not terminating the last exercise and adding, 'Now I am tired and I fall asleep'.

Autogenic Training is very successful with adults, but Schultz reports of children, that it is difficult to get results below the age of ten years and is unsuccessful below age six.

Meditation and the Relaxation Response

The Relaxation Response is a state of deep relaxation, achieved by a meditative technique, that was developed by Benson (1975) at Harvard's Thorndike Memorial Laboratory and Boston's Beth Israel Hospital. It is a technique based on Eastern meditation practices, and is said to produce a state that is comparable to Transcendental Meditation.

Benson's work began with his studies, aided by the use of biofeedback equipment, to show that hypertensive human beings were capable of lowering their blood pressure. The patients claimed they did so by thinking relaxing thoughts, which led Benson to wonder if the same results could be achieved without the expensive and cumbersome biofeedback equipment. Subsequent research showed that the same results could be achieved by other means.

Benson began his search by studying Transcendental Meditation, developed by Maharishi Marish Yoga, which is a revised form of Yoga more readily grasped by Westerners. TM is a surprisingly simple technique carried out under reasonably uniform conditions. Laboratory research revealed that the physiologic changes as observed in the practice of TM were the same as those brought forth during biofeedback. These physiologic changes were in no way unique to TM.

Further research by Benson into meditative techniques revealed that there appeared to be four basic elements common to all techniques:

1. a quiet environment,

2. a mental device: a sound, word or phrase repeated silently or aloud, or the fixed gazing at an object. The repetition of the word prevents 'mind wondering' and breaks the train of distracting thoughts.

3. a passive attitude: this is the most important element. The individual should not worry about how well he is performing the technique, rather, just let it happen. Paradoxically trying to elicit the meditative state will prevent it from happening. Distracting thoughts will occur, and it is emphasized that this is normal; just let them go and return to the word.

4. A comfortable position: this is important so there is no undue muscular tension. If lying down, there is a tendancy to fall asleep; this should be avoided.

Benson incorporated these four basic meditative elements and the cue word 'ONE' (equivalent to a mantra), into a simple technique that achieved results parallel to those achieved by TM: Benson named the final state the "Relaxation Response'. For maximum benefit the Relaxation Response was to be elicited twice daily in the following manner:

1. sit quietly
2. close eyes
3. deeply relax all muscles
4. breathe through the nose and as you exhale say the word 'ONE' silently to yourself. Allow thought to drift away and maintain focus on 'ONE".
5. continue for 10 - 20 minutes. Open eyes to check the time, but do not use an alarm.
6. Do not worry about whether or not you are successful in achieving a deep level of relaxation. Maintain a passive attitude.

Altered states of consciousness associated with the Relaxation

Response have been described as: at peace with oneself and the world; a sense of well being; pleasurable. The Relaxation Response lies within all of us: It is innate, subjective, and similar to those subjective states described in other meditative and religious experiences. The Relaxation Response has been part of the cultures of man throughout the ages. Many Eastern religions and ways of life such as Zen and Yoga elicit the response, however, in the Western world the Relaxation Response elicited by religious practices was not part of religion.

Although the Relaxation Response has always existed in the context of religious teachings, its physiology has only recently been defined. The Relaxation Response quiets the sympathetic nervous system: it decreases and counteracts the increased sympathetic nervous system actively that accompanies the fight-or-flight response. The Relaxation Response, a trophotropic response, appears to be controlled by the hypothalamus: It decreases metabolism, blood pressure, heart and breathing rate. It is a protective mechanism which brings the body back to a healthier balance, and allows homeostasis to be restored.

The Relaxation Response, whether elicited by Benson's (1975) method, or by Transcendental Meditation, has been effective in reducing drug dependancies (both legal and illegal drugs), alcoholism, and stress related illnesses. The most appealing use of the Relaxation Response is its preventive role with regards to high blood pressure and other disease states where increased SNS activity is a principle factor in development of the disease. However, it is not a cure, and its benefits will only continue with regular use. When evoking the response ceases, so do its benefits cease.

Although the Relaxation Response is innate it must be emphasized

that it can only be brought forth by setting aside a time and deliberately eliciting it. Benson states that in modern times we look for quick and easy solutions to our problem, and with the taking of a pill assume our problems will disappear. However, simply using one innate mechanism to counteract another would do much to aleviate the stresses of modern day life. This has enormous significance in our modern pressured society, and may prevent huge personal costs.

Summary

All procedures to achieve a deep state of relaxation have very similar effects both physiologically and psychologically: its mainly the methods of attaining the relaxation that differ (Pelletier, 1977). The focus of all methods is to develop the individual's ability to shift readily into a relaxed, low-arousal condition, with the self-regulation of muscular and autonomic activity (Stoyva; Basmajian (Ed.), 1978). The ability to initiate this state at will is the ultimate aim, to counter the effects of the fight-or-flight response by substituting the low arousal state in response to a stressor (Budzynski, Stoyva, Basmajian (Ed.), 1978; Pelletier, 1977; Stroebel, 1978). Schultz and Luthe (1959) pointed out that psychophysiologic effects of relaxation therapy are diametrically opposed to the effects elicited by stress. These changes are due to the stimulation and promotion of trophotropic mechanisms which is made possible by the self-induced elimination and relative inhibition of ergotrophic functions.

Relaxation therapy can be applied to a considerable range of disorders: many stress related. During self-regulation the individual moves toward a state of increased physical and emotional normalization. The interaction between the two mutually inhibiting systems within the

autonomic nervous system (the sympathetic and parasympathetic) during stress or relaxation, demonstrates Cannon's (1939) concept of homeostasis. Deep relaxation is the first step in gaining mind-body coordination. Green has stated that during relaxation the body and the mind are momentarily freed from stress. "This repreive coupled with visualization of normal body functioning brings about a rebalancing, a return to healthful homeostasis" (Foundations of Biofeedback Practice, 1979, p.1-102).

Relaxation requires practice, as any skill does, to be learned and to be effective. All methods require 10 to 20 minutes practice, once or twice daily for maximum effects of learning, and transference. Budzynski believes that daily practice is the best method of transference (Basmajian (Ed.), 1978). Stroebel (1978) has suggested many, mini (10 second) relaxations throughout the day: as often as every half hour.

The experiential aspects of deep relaxation involve (1) the little understood psychological processes of volition, or will, (2) awareness of sensations, and (3) shifts in the thought processes (Stoyva, Basmajian (Ed.), 1978). Paradoxically, the willful 'control' needs to be relinquished before autonomic regulation can occur (Pelletier, 1977). Individuals learn to 'let go' and 'not try', after which an internal quieting gradually occurs (Benson, 1975; Jacobson, 1938; Schultz and Luthe, 1959). It is difficult for some people to surrender all effort to control, but Schultz and Luthe (1959) have said, active will power, energy and attention, reduce or reverse the trophotropic effects of passive concentration almost instantly.

A number of bodily sensations may occur during profound

relaxation, such as: heaviness, warmth, or tingling in the limbs; sensations of drowsiness or floating; perceived changes in limb position or length; and, if the individual is drowsy, hypnagogic imagery may occur. These body sensations are natural and the result of the shift from sympathetic nervous system dominance toward parasympathetic dominance. For example, peripheral warmth is the consequence of reduced sympathetic activity. These sensations are important. When the individual is practicing he can use their presence for his own feedback, to recapture the profound relaxation (Stoyva, Basmajian (Ed.), 1978). All methods of relaxation have a cue word, phrase (mental devices) or sensation (eg. the X-sensation, Jacobson, 1938) which has been paired and classically conditioned to the relaxation response. To evoke the profound relaxation the individual need only reproduce the mental device and sensations.

Stoyva (Basmajian (Ed.), 1978) has said that during deep relaxation there is a change in thought processes from reality-oriented thinking (eg. problem-solving) to a mental activity described as non-voluntary, free-flowing, drifting. "Profound relaxation probably does not occur unless there is this shift in conceptual processes" (p.97). Benson (1975) notes, the relaxation techniques train the individual to let go of meaningful thoughts when they present themselves and to return to the mental device; this is contrary to traditional psychoanalytic practice which trains the individual to hold on to the free-association; to hold on to the distracting thought rather than letting it go and disregarding it may interfere with eliciting the relaxation response.

Woodsworth believed that a cessation of the intellect and

desires, and a relaxation of will, could induce a 'happy stillness of the mind' - an equilibrium - that with habitual training anyone could experience "the central peace subsisting forever at the heart of endless agitation" (Benson, 1975, p.138).

Mind-Body Interaction

When considering the stress response and relaxation, it is perhaps equally important to consider how these responses are initiated within the organism. The interaction of the mind and body with the consequent mental, physiologic, and biochemical changes is described by Whatmore and Kohli (1974) in terms of action-potentials (nerve impulses) within the nervous system: which are transmitted by way of neurons. It is the influence of the action-potentials, via feedback loops, on the reticular activating system and hypothalamus that provide the best evidence for the interconnections of the mind and body (Pelletier, 1977). The hypothalamus also controls the endocrine system (hormones) via the pituitary gland: therefore, chemical signals carried by the bloodstream and tissue fluids, as well as action-potentials, are under the influence of the hypothalamus.

The hypothalamus and reticular activating system appear to be the 'control mechanisms' of the stress response and deep relaxation.

Ponesis

One significant source of signals within the nervous system consists of action-potential output (impulses) from the premotor and motor cortex, called effort, or ponesis. It includes the action-potentials in decending pathways, side branches, lower motor neurons and thereby to skeletal muscles, and feedback pathways from propreoseptors; it also includes circuits within parts of the nervous

system such as the reticular activating system, hypothalamus, limbic system and neocortex.

Ponetic signaling effects pertinent to the present study consist of excitation and inhibition of neurons, muscle fibres, and glandular cells. Signals are transmitted by inborn (inherited, genetically determined) pathways, and through acquired (conditioned or learned) pathways resulting from experience, or can be initiated as a voluntary act. The co-ordinated action of various forms of ponesis assist the human organism in survival. Ponetic signaling, resulting from ponesis, occurs in both covert and overt forms. Some ponetic signaling is extremely subtle, such as conditioned neuronal activity in the reticular activating system, hypothalamus, and limbic system. Conditioned neuronal activity in pathways to the muscles can also be covert, and is so slight that the muscular contraction produced is not visable.

There are four kinds of ponesis: (1) bracing efforts, (2) performing efforts, (3) representation efforts, and (4) attention efforts.

Bracing. Bracing efforts are action-potentials which are responsible for a portion or all of the skeletal muscles being held partially contracted, or 'on guard'. It prepares the organism for quick and vigorous action by firing signals into, and activating: the reticular activating system; the hypothalamus, thus activating the sympathetic portion of the autonomic nervous system, and the endocrine system; and, by causing slight contractions of the muscle fibres to take up the slack. Bracing causes increased heart rate, elevated blood pressure, secretion of adrenal hormones, and mobilization of glucose

and fatty acids, consistant with activation of the fight-or-flight response.

Bracing is also a nonspecific intensifier of limbications (emotions) and all neocortical activity.

Performing. Performing efforts are similar to those of bracing, except overt action is produced. The pathways are the same as those utilized by bracing efforts.

Attention. Attention efforts are an input-facilitating device whereby specific input signals, to which attention is directed, are facilitated: enabling them to have a greater influence upon the organism than other signals. Attention can be directed to only 'one' input at a time, but can shift back and forth rapidly to appear simultaneous. A frequently shifting attention is necessary to maintain the waking state. Attention determines which sensory input will be subjectively experienced: it can be directed to exteroceptive input (external environment), to interoceptive input (internal environment), to representations, or one's own ponesis.

Representations. Representing efforts activate sensory circuits, producing sensory images called representations (eg. visual, auditory, proprioceptive, tactile and pain images). Representation plays an important role in voluntary acts, and is the basic physiologic mechanism underlying the activity of thinking or ideation. Often one representative will activate another via a conditioned pathway.

Visual and auditory representations are especially important. Visualization produces the same action potentials as seeing or looking; auditory representations activate the speech muscles and give rise to auditory images of sound. In both cases it is only the magnitude of the

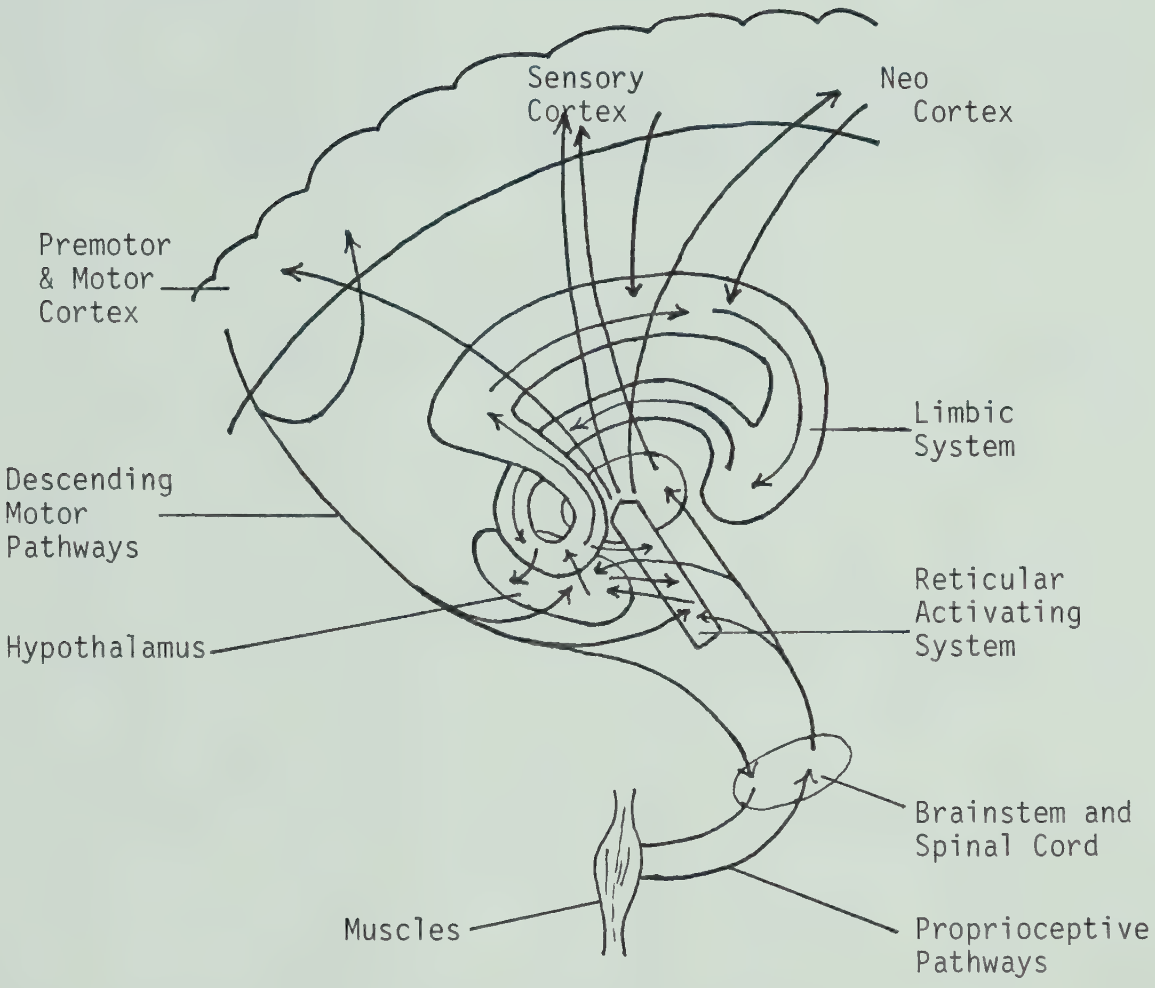

Figure 2

Pathways of Ponetic Signalling
(Composite abstract from
Whatmore & Kohli, 1974)

signal that is different (it is less); the action-potentials initiated are similar to those activated during the actual sensory experience. Propreoceptive images activate minute ponesis in premotor and motor circuits controlling muscles that would be used for movement, and the consequent sensory circuits.

Representing also provides signal input into other circuits such as the limbic system and motor cortex via inborn or conditioned pathways.

Bracing and performing efforts can only activate, never inhibit, ponetic signaling. Attention and representations are capable of activating or inhibiting ponesis.

These forms of ponesis provide signal input into, and influence the functioning of: the reticular activating system (which controls arousal levels); the hypothalamus (which controls the autonomic nervous system and the endocrine system); the limbic system (which by way of circuit activity called limbication produces the subjective experience called emotions); and the neocortex (which influences thinking or ideation, and consciousness); therefore, they also control the activities that these structures and systems control.

Hypothalamus and Reticular Activating System

The hypothalamus, located in the inter-brain, controls both the sympathetic (ergotrophic) and parasympathetic (trophotropic) branches of the autonomic nervous system, plus influences the activity of the endocrine (hormone) system via the pituitary gland. The reticular activating system (RAS), a network of nerves which project from the brainstem to the entire neocortex, controls arousal levels of the

organism. Therefore, both the hypothalamus and the reticular activating system are two primary physiological systems which regulate bodily functions, such as states of activity versus states of tranquility.

Attention efforts influence the hypothalamus and RAS according to the inborn or conditioned effects of the signals it is facilitating (eg. calmness, or activity). Representations influence these systems by the nature of the representing, and depend on conditioned pathways present; they also influence these primary systems by way of their effect on bracing, and the limbic system.

Limbic System Activity

Circuit activity within the limbic system, called limbication, constitutes the subjective experience called emotion. The intensity of the circuit activity determines the magnitude of the emotions. Limbications activate or inhibit, via inborn pathways, the hypothalamus and reticular activating system, with consequent activity consistant with the particular limbication (eg. fear, or delight).

Representations are specific activators of limbic circuits; they supply input signals to the limbic system via inborn and conditioned pathways. They activate specific limbications of: (1) fear, (representing an unpleasant future event that might occur - the 'dreaded event'); (2) sadness, (representing a present plight); (3) anger, (representations directed towards the person who is responsible for the present plight); (4) excitement, (representations of future events - goals); and (5) delight, (representing progress towards goals).

The intensity of the limbic activity is determined by, (1) the magnitude (frequency plus number of pathways involved) of the signal, (2) the amount of limbic activity already present when the signals

arrive, and (3) the amount of bracing within the organism.

Bracing is a nonspecific intensifier of all limbic system activity by its excitatory effect on the hypothalamus and reticular activating system. Therefore, whatever representing of sensory-images (eg. pain) and emotions is present, it is intensified to the degree of the bracing present. Attention effects limbication only through the excitatory or inhibitory effects of the signals it facilitates.

Neocortical Activity

The neocortex influences thinking or ideation, and plays a significant role in the production of sensory experience, voluntary motor activity, and the subjective experience called consciousness or being awake. It also plays a role in the production of, and is effected by, ponetic signaling.

Bracing and performing activate the neocortex diffusely, and attention activates or inhibits circuits by the effects of the signals it facilitates; all by way of connections with the hypothalamus and reticular activating system.

Representations (imagery) can activate, not activate, or actively inhibit (via inborn or conditioned pathways) circuits in the premotor and motor cortex which give rise to attention, bracing, performance and circuits constituting other representations. Plus, representing can activate or deactivate the neocortex, indirectly and diffusely, by its effect on bracing and limbic circuits and their effect in turn on the reticular activating system. Representing can influence the content of subsequent representations indirectly by its influence on limbic activities and their feedback effect on the representing process.

Limbications (the representing of emotion) increase or decrease

neocortical arousal, depending on the nature of the limbication.

It is the feedback effects and interaction of the four kinds of ponesis (bracing, performance, attention and representations) on the reticular activating system, hypothalamus, limbic system, and neocortex, and their effect in turn back upon ponesis, that is significant in the bodily states of stress and relaxation.

Dysponesis

The ponetic signaling system is a complex system, and therefore subject to signal error. Whatmore and Kohli (1974) refer to errors in ponetic signaling as dysponesis: Dysponesis is signal error that activates physiologic or biochemical mechanisms in a manner detremental to the welfare of the organism. Dysponesis can occur in any of the four categories of ponesis, and is often activated via conditioned pathways. Dysponetic signaling is called misdirected effort.

Dysponesis effects the four areas of ponetic signaling in the following ways:

1. Bracing errors: dysponesis activates mechanisms that are appropriate to bracing signals but detrimental to the organism; eg. excessive bracing, or bracing at inappropriate times, such as when the body is constantly kept 'on guard' when there is no immediate threat or danger.

2. Attention errors: produce effects that interfere with health and effective functioning by (a) directing excessive attention to unpleasant interoceptive (internal) signals, allowing mildly unpleasant ones to have too great an influence (b) allowing the immediate external environment (exteroceptive signals) to exert too great an influence

(c) too frequent shift-of-attention; this hyperactivates the reticular activating system and tends to disorganize behavior (d) directing attention excessively to representations and allowing them to have too great an influence, thus preventing the influence of external experience.

3. Representation errors: also interferes with health and effective functioning; (a) re-representing error: activates limbic and other circuits repetitiously to the detriment of the organism, eg. re-representing past or present 'dreaded events', and who's responsible, keeps the system activated via the biochemical effects that the emotions fear and anger have on the organism. The re-representing error may also be future oriented, the dreaded event that 'might' happen, in which case the system is activated by anticipation. (b) failure to represent error: is the absence of circuit activation at a time when activation is appropriate, and (c) the inaccurate representing error: incorrectness of the representation or lack of conformity to the external world, which activates inappropriate circuits.

4. Performing errors: are usually the consequence of bracing, representation and attention errors, and consist of overt acts that are detrimental to the organism.

Dysponesis in any of the four areas of ponetic signaling tends to activate, or over-activate the organisms systems and therefore interferes with health and effective functioning.

Summary

Action-potential output from the premotor and motor cortex called effort, or ponesis, provides a significant source of signals within the

nervous system. There are four kinds of ponetic signaling: bracing, performing, attention and representations. These signals can be both covert and overt in form.

Of importance is the effect these signals, by way of their action, on the reticular activating system, hypothalamus, limbic system, and neocortex; conversely, the effect of these systems back upon the four kinds of ponetic signaling. Ponetic signals can activate or inhibit (bracing and performing can only activate; attention and representations can activate or inhibit) the other primary system via inborn or learned pathways, or can be initiated as a voluntary act.

The primary systems control the major functions of the body: the reticular activating system controls arousal levels; the hypothalamus controls both the autonomic nervous system, and the endocrine system. It is the reticular activating system and hypothalamus that are responsible for bodily states of activity (eg. during the stress response), and states of tranquility (eg. during a state of deep relaxation). However, these two primary systems are in turn controlled by our imagery (eg. sensory-imagery of visualizations, X-sensations, proprioceptive images, etc.), muscle tension, thoughts, emotions, and states of consciousness.

Both (1) cortical pathways, and (2) descending, motor, and proprioceptive pathways appear to have feedback loops with the hypothalamus and reticular activating system; thus, each effecting each other, and the four forms of ponesis.

Dysponesis has been defined as misdirected efforts (action-potentials) which are detrimental to the welfare of the organism. Dysponesis can occur in all four forms of ponesis.

Why Relax?

Fink (1962) has said that excess tension is a physical disease, not one of imagination: You cannot think yourself into mental health anymore than you can imagine yourself into a cure for a broken leg. Wishing and willing do not make it so. "To get well, if you are nervous, you must treat physical things, the nerves in your interbrain" (p.39). Hunger, lack of sleep, and conflict will cause the nerves of the interbrain to misbehave. However, misbehavior of the interbrain is not under voluntary control; giving orders to the body with the forebrain will not bring results when the message can only be received via the interbrain. The body must tune in to the appropriate channel.

When treating nerves of the interbrain, Whatmore and Kohli (1974) note; since neurons receive signals from many other neurons, both excitatory and inhibitory signals can arrive simultaneously. When this occurs the algebraic sum of their influences determine the final excitatory or inhibitory effect. Inhibitory signals need to be greater for inhibitory effect.

Fink has stated that emotional responses and resulting muscle tension can become a habit. Relaxation (the opposite of muscle tension) breaks the muscular and emotional habit patterns. Relaxation stops the emotions that prod the interbrain and forebrain into misbehavior: It is 'the process' of inhibiting muscle tension and emotional muscular behavior. Fink suggests 'letting go' to see for oneself; real health will replace the half-alive feeling. Fink believes that an individual cannot confuse his neurosis until it no longer has a hold on him. Self-analysis can then follow the disappearance of the habit and complete the cure.

Awareness

The stress response is often appropriate and should not be thought of as always harmful. However, in order to prevent damage caused by excessive or misdirected stress, the individual needs to learn what levels of tension are appropriate and what levels are not. Stroebel (1978) has said that 70% of illnesses are caused by or made worse by stress; anticipation of pain causes bracing, which further increases muscular tension and intensifies all limbic system (emotional) activity. Bottled-up anger and resentment causes restless bodies and tired minds, or tired bodies and restless minds. Stoyva has stated that it is remarkable how many people are not aware of the heads connection to the body and vice versa (Basmajian (Ed.), 1978). Identifying stressors and sensitizing ourselves to body cues is important in taking preventive measures (Pelletier, 1977).

Stroebel (1978) notes that we need to identify how our mental states, and images, alter our tension states - before we experience the exhaustion of our body's defences. We need training in the Quieting Response (Stroebel's term for deep relaxation), which is incompatable with symptoms that lead to illness, if we are to rediscover our calm inner selves. Once learned the Quieting Response can be called forth when needed. Many researchers believe that being aware of tension or stress presupposes dealing effectively with it (Basmajian (Ed.), 1978; Lamott, 1974; Lupin, 1977; Stroebel, 1978, 1980; Selye, 1976). Many individuals are not aware of how tense they are until after they have learned to relax. Previously, tension was normal for them, and not until the residual tension is alleviated are they aware of the difference.

Stroebel (1978) believes that each individual must make his own choice: Do I want to experience anxiety, tension and pain, or am I willing to change? Stroebel has said there is no magic solution - no pill to swallow - each individual must take the time to learn deep relaxation for himself. Just as many of our maladaptive, autonomic, habits are learned (Budzynski, Foundations of Biofeedback Practice, 1979), so can new behavior be learned to override them. Many individuals, however, do not know the 'how'. The awareness of 'how' is as important as the awareness of 'the need'. Green and Green have stated, that the body must become quiet before it will respond to visualized instructions. They believe that trying to program the body when it is not quiet "is like trying to make recordings with a tape machine while it is in 'playback' mode. Unless the device is on 'record' mode, it will not record" (Basmajian (Ed.), 1978, p.158). A sympathetic (nervous system) turn off is required to prepare the body to receive instructions.

Selye wrote, "Psychoanalysis has shown that knowledge about oneself has curative value" (1976, p.xvii): This was partially his goal in writing his book. Selye believed that in the struggle to understand oneself we may find the solutions to solve some of life's problems. Some form of psychotherapy may be necessary also, depending on the intensity of the distress (Pelletier, 1977). However, Pelletier further states that many psychotherapeutic disciplines rely entirely upon insight to rectify the problem. Pelletier notes that merely providing insight is not necessarily sufficient to enable the individual to alleviate the problem; even when aware of the sources of stress and behavior patterns which lie at the root of the problem, there is still

a process needed to go through in order to learn new ways. Deep relaxation is that process.

It is imperative to be aware of the connection between behavior, attitudes, and autonomic neurophysiological functions. Often people are not aware, and they have no escape from their delema.

The Effects of Imagery

When we are aware of what is going on inside our bodies, we can voluntarily change it, if we choose, via a new mental-emotional response. The new limbic response modifies or replaces the original response which developes a 'new' pattern of hypothalamic firing, pituitary secretions, levels of arousal, and thus changes in the physiologic state (Green & Green, Basmajian (Ed.), 1978).

"According to Dr. Maltz, our brain and nervous system cannot tell the difference between something that is a real experience and one that is vividly imagined" (Lupin, 1977, p.44). Maltz uses imagery to eliminate the negative emotions caused by frustration, aggressiveness, insecurity and resentment, and to increase the individuals feelings of self-worth (Lupin, 1977). Imagery is a powerful changer of mind and body. Because of the interconnections between the limbic system, the hypothalamus, and the reticular activating system, you can control your body if you can control you images and emotions. "Imagery rehersal allows you to work through events before they happen" (Green & Green, Basmajian (Ed.), 1978): It allows detachment; especially if practiced in a passive, relaxed, or meditative state (Pelletier, 1977). In keeping with the desire to maintain positive emotions and images during relaxation, the Green's suggest to their clients the old Yogic

instruction, "Do not fight negative thoughts, merely replace them with positive ones" (Basmajian (Ed.), 1978, p.166). Negative ideas and emotions, with their subsequent effect on ponetic signaling, interfere with the programming of the body; they initiate 'playback' when 'record' is desired. Replacing negative imagery with positive imagery will have a calming effect on the body; returning to the individuals cue for relaxation (the mantra, phrases, or X-sensations) will lead the body to the desired state of deep relaxation.

The effects of the imagination on the muscles of the body was first demonstrated by Jacobson (1938). Using primative biofeedback equipment, Jacobson demonstrated that covert muscular contraction can be detected by electronic instruments which measure electrical impulse fluctuations. Jacobson asked his client to imagine lifting a ten pound weight. The graph print out regarding muscle activity was the same as if the individual had actively used the muscles. The increase in action-potentials had been initiated by the imagination. Modern biofeedback equipment and body chemical analysis have shown that bracing produces autonomic changes, and decreased bracing produces the opposite changes (Whatmore & Kohli, 1974). Any difficult mental task is usually accompanied by physical tension, and nervous agitation, and therefore also produces a reaction in electrical impulse fluctuations that are measurable (Payne & Reitano, 1977).

Imagery activates the circuits (action-potentials) similar to the actual experience: only the magnitude is different. Real or imagined demands create the same physiological response; it makes no difference to the body if the 'dreaded event' is real or not. Thus, modern equipment is able to support Maltz's statement that the body will

respond to vivid imagination, and also supports Cannon's early studies which revealed that the 'anticipation' was sufficient to initiate the bodily changes. Jacobson stated in the 1930's that it was the re-initiation of the 'X-sensations' (sensory images) that allowed body functions to move toward a state of deep relaxation.

Emotional Release

Jacobson (1938) reported that emotions tended to deminish during the course of the months that the individual acquired the habit of relaxation. What Jacobson termed 'sensitiveness', meaning proneness to arousal of anger, resentment, and other painful emotions, subsided as the individual completely relaxed. Jacobson has said it is impossible to be emotional and relaxed at the same time: "an emotional state fails to exist in the presence of complete relaxation" (p.218). Relaxation mechanically shuts off the mental and emotional hypertension caused by the impulses (action-potentials) of rehearsing grief, as attention is shifted away from the problem.

Schultz and Luthe (1959) reported similar results. Over the period of time that the individual practiced Autogenic Training, patients reported that their anxiety, insecurity, and neurotic reactions tended to smooth out or gradually loose their significance. Generally there was an increase in emotional and physiologic tolerance, "with a considerable decrease in the previous need for reactive affective discharge." (p.2) reported by their patients. Jacobson (1938) also noted that after learning to relax, the patients often reported disappearance of symptoms never before mentioned to the therapist.

Jacobson (1938) explained, that as the patient relaxed his voluntary system there was subsequent reduction in emotion; one system

must become quiet before the other one does. Whatmore and Kohli (1974) describe the overlap of the muscular and emotional systems, by way of the interconnections of the two systems, within the hypothalamus and reticular activating system, where signals are converted to autonomic, endocrine, and arousal level, responses. Stoyva has said that during relaxation, the client is very much in the present, the 'here and now', and is not worrying about the past or the future; therefore, emotionality is reduced (Basmajian (Ed.), 1978). Benson (1975) does not speak of decreased emotionality directly, but refers frequently to the 'ecstacy' described by religious leaders and poets of the past who had experienced the Relaxation Response.

Green (Foundations of Biofeedback Practice, 1979) has noted that during relaxation, success in the physiological realm is accompanied by a bubbling into consciousness of the problem in the psychological realm. This would be consistant with Schultz and Luthe's (1959) observations. They noted that during Autogenic Training, unconscious material becomes more readily available, and that recovery of dream material, and free association, is enhanced: over-all capacity for psychophysiologic adaption is enhanced. As a result social contact frequently becomes less inhibited and more natural, with improvement in inter-personal relations.

Jacobson (1938) believes that the lack of emotion which is experienced during relaxation differs from suppressed or concealed emotions. During repression the affective phenomena of emotion is increased, and becomes all the more responsive. However, Jacobson notes, "these phenomena evidently differ from extreme relaxation, where no attempt is made to conceal or suppress and the subjects report that

the emotional experience diminishes, disappears or fails to appear" (p.219).

Deep relaxation appears to be a combined mind-body therapy.

Mind-Body Quieting

Relaxation produces a progressive inactivation of the nervous system. Since general neuromuscular relaxation produces a quieting effect upon the nervous system, the question of interest is: How does this come about? Jacobson (1938) stated, studies show that a change in impulses from changed proprioceptive and exteroceptive stimuli in one portion of the nervous system have overflow effect into relatively distant parts. Tonus in the skeletal muscular system tends to evoke tonus in the visceral muscular system; conversely increased visceral activity produces increased tonus of the skeletal muscles. Tonus progressively ceases to function as voluntary relaxation advances.

Higher cortical levels have a two-fold influence, excitatory and inhibitory (Jacobson, 1938; Whatmore & Kohli, 1974). Jacobson (1938) believed the mechanism of Progressive Relaxation involved the dimunition of proprioceptive muscle sensation. He noted, relaxation "is probably brought about by the cessation of impulses along motor nerves extending to a muscle" (p.267). He explains; "as relaxation progresses and reflex contractions deminish, there is consequent diminished production of proprioceptive impulses, tending thus toward a progressive decrease in the production of further reflexes" (p.296). Ponetic impulses per second markedly decrease, which is why relaxation is incompatable with contraction of muscles. Cultivation of relaxation does away with motor unrest.

Schultz and Luthe (1959) have similarly expressed the results of

relaxation. The relative silence of brain activity results from reduction of afferent and efferent impulses. Reduction in afferent impulses automatically induces (1) decrease in reticulocortical activity (diffuse and regional), (2) decrease in evoked potentials, and (3) functional changes in hypothalamic activity. "From a psychophysiologic point of view these changes are conceived as inducing a nonspecific preparatory state which facilitates the deactivation of ergotrophic...mechanisms and thus enhances a subsequent promotion of trophotropic...functions" (p.243). Afferent stimuli must be reduced to the lowest possible physiologic level to achieve maximum therapeutic effects of Autogenic Training.

Jacobson (1938) noted that as relaxation advances, the cerebral activity of attention diminishes. Whatmore and Kohli (1974) show that frequently shifting attention varies the input to the reticular activating system and keeps the organism awake. If the rate of shifting attention is reduced by any means (eg. voluntarily, by a monotanous environment input, or fatigue of the attention mechanism) "the repetitive firing of neurons composing the reticular activating system begins to dwindle" (p.32). If attention diminishes sufficiently the organism falls asleep. The influence of attention on the level of arousal is utilized in meditation and Yoga. Attention is focused on breathing, a word, or mantra, thus diminishing attention; therefore reducing arousal levels. The goal is to remain in a state of low arousal which is inbetween being fully awake and fully asleep. This state is said to be pleasant, and may enable a return to more orderly circuit activity within the nervous system, and possibly restore intracellular energy reserves.

The dwindling of repetitive firing of neurons within the reticular activating system appears to occur also with the reduction of bracing as in Jacobson's Progressive Relaxation (1938), and with the changes in representations (sensory-images) as in Autogenic Training (eg. reticulocortical activity decreases; Schultz and Luthe, 1959). Imagery and thinking processes also decrease and disappear (Jacobson, 1938). The reticular activating system influences the hypothalamus by way of neuronal pathway connections; thus, the sympathetic portion of the autonomic nervous system is deactivated, which allows parasympathetic dominance.

Deep relaxation is a matter of nerve re-education; the cultivation of a relatively passive response. Since, signals are transmitted by way of inborn, and acquired pathways, and can be initiated as a voluntary act; mind-body quieting consists of conditioning the pathways, and then voluntarily influencing the action-potential activity via these conditioned pathways. It is the promotion of trophotropic oriented mental and bodily functions.

Functional Disorders

Functional disorders are disorders that have their origin in physiopathology rather than structural pathology. "This physiopathology consists of altered circuit activity within the nervous and neuromuscular systems and the consequent alterations in tissue and organ function" (Whatmore & Kohli, 1974, p.181). This altered circuit activity results from signaling error within a complex signaling system (Whatmore & Kohli, 1974), and from inappropriate, and overactivation, of the emergency response (Cannon, 1939; Benson, 1975; Pelletier, 1977; Selye, 1974, 1976; Stroebel, 1978, 1980). When the emergency response

is prolonged and unabated, the complex mechanisms of the stress response initiate biochemical and structural changes within the organism that can lead to illness and disease (Selye, 1976). Once illness is present, the bracing against the pain and worry intensifies the stress response, with its resultant effects on the body (Whatmore & Kohli, 1974). Thus a degenerative spiral is set in motion. Stress induces changes in the immune system; atrophy of the thymicolymphatic structures and destroys white blood (eosinophil) cells (Selye, 1976). Effective intervention may be able to regulate these imbalances before they become amplified beyond correction (Pelletier, 1977).

Pelletier (1977) suggests that all disorders be viewed as psychosomatic in origin, in the sense that mind and body are involved in their etiology. Once viewed this way, as a complex interaction of the mind and body, symptoms can be viewed as early indications of excessive strain on the mind/body system.

Effective intervention would be preventive; therapy initiated before, or at the first signs of, maladaptive functional symptoms (Benson, 1975; Jacobson, 1938; Schultz and Luthe, 1959; Whatmore & Kohli, 1974). To this, Whatmore and Kohli add; the origin of the dysponesis is not considered important for treatment purposes. Readjustment has therapeutic value, by restoring homeostasis.

Summary

Deep relaxation, with its associated nervous system effects, can be considered an adjunct to traditional medicine to alleviate anxiety and stress related disorders: Emphasis may be placed on the preventive role as well as the corrective. The ultimate aim of all methods producing deep relaxation is a reflex-like response, into a relaxed

state, from a stressful one. Sympathetic arousal is a correlate of anxiety states whereas relaxation is "characterized by inhibition of the sympathetic nervous system" (Pelletier, 1977, p.192). Stress has both positive and negative aspects, and as Pelletier notes, "it is not just the setbacks in life that require adaption" (p.84). Recognizing when we are overstressed and when to practice stress-reduction techniques is necessary; to know 'when', as well as 'how', is of vital importance. Our time and energy can then be spent on leading a fuller life, rather than combating stress and illness.

Schultz and Luthe (1959) report that longer periods of relaxation training result in revival and strengthening of trophotropic functions, which in turn increase the efficiency of subsequent ergotrophic functions. They also report, overall improvement in adaptability, increase in psychophysiologic efficiency, and decrease in susceptibility to infections and harmful consequences resulting from emotional and/or other stressors. Their observations support the belief that subtle mental phenomena can have profound impact upon the individual's entire psychophysiology (Pelletier, 1977).

A deep state of relaxation, can be developed by any of the relaxation techniques. Once mastered, "the self-regulating effect...does not fade away anymore than knowing how to ride a bicycle fades away" (Green, Basmajian (Ed.), 1978, p.156).

Theoretical Summary

The stress response has two effects within the body: the short term effect and the long term effect. The short term stress response is known as the emergency, or fight-or-flight response (Cannon, 1939), and

is activated when increased activity is needed or anticipated. If the stress is continued and unabated, the long term stress response, known as the General Adaptive Syndrome (Selye, 1976) is activated to enable the organism to resist the stressor.

All organisms have an innate counter response which is sometimes called the relaxation response: a form of deep relaxation with autonomic nervous system activity counter to that experienced during stress. Deep relaxation has traditionally been evoked by: Progressive Relaxation (Jacobson, 1938); Autogenic Training and Visualization (Schultz and Luthe, 1959); and Meditation and the Relaxation Response (Benson, 1975). Deep relaxation needs to be evoked - it does not occur spontaneously. Deep relaxation has been shown to have beneficial effects, and allows the body an opportunity to restore homeostasis.

The mind-body interaction described by Whatmore and Kohli (1974) and their concept of ponesis shows how the individual's mind, the thoughts he thinks, imagery, and emotions can influence the body via bracing, performing and attention - and conversely the opposite; and either the calming or arousing effect is reflected in the organism. Dysponesis (faulty or misdirected ponetic signaling) leads ultimately to functional disorders.

Awareness of tension is necessary in order to reduce it. Reducing tension effectively reduces excess emotional reactions. When relaxation is accompanied by the use of positive self-talk, visualization, and the use of imagery, the course of one's self-image and positive feelings can be redirected; in the absence of anxiety.

Only the past cannot be changed. Payne and Reitano (1977) cite Carlos Castaneda and Don Juan, who put it very clearly: "The trick is in what one emphasizes. We can either make ourself miserable or we can make ourself strong. The amount of work is the same" (p.v-3).

CHAPTER III

REVIEW OF RELATED LITERATURE

Investigation of Relaxation Training with Elementary School Children

Vacc and Greenleaf (1980) investigated the effects of deep muscle relaxation (DMR), and deep muscle relaxation with covert positive reinforcement (DMR with CPR) similar to systematic desensitization, on children's behavior problems. The sample consisted of public school children who had been classified as emotionally disturbed. Twenty-eight children, aged 6 - 12 years, were randomly divided into four groups: (1) DMR; (2) DMR with CPR; (3) placebo control; and (3) no treatment control. The treatment groups met for half-hour sessions twice a week for four weeks. In addition both treatment groups were asked to practice at home: no follow-up is reported to confirm this was done. The DMR group practiced deep muscle relaxation only. The DMR with CPR practiced deep muscle relaxation only for the first three lessons. During the remaining five sessions the children practiced deep muscle relaxation, plus imagined their behavior from scenes described by the experimenter. The children were pre-post tested with the Behavior Rating Scale (BRS: by Haring and Phillips, 1962) and a modified Taylor Manifest Anxiety Scale. The results showed that neither treatment group improved significantly, but tended to improve their score more than the placebo or control groups. This was especially true of the DMR group.

Sullivan (1980) investigated the effects of attention (meditation) and relaxation training (Jacobson, 1938), on reading achievement, levels of anxiety, and problem behavior, of third and

fourth grade children. One hundred ninety one students, from two schools were divided into three groups: (1) meditation, (2) relaxation, and (3) a no treatment control group. Training was on a daily basis (three minutes a day for the first two weeks, and five minutes a day for six weeks) for a total of eight weeks. All children were pre and post tested with the appropriate Stanford Diagnostic Reading Test (SDRT) and Sarason's Test Anxiety Scale for Children. Plus, teachers were asked to complete the Walker Problem Behavior Identification Checklist (WPBIC) for each child. Results on the SDRT showed significant changes for the third grade students ($p < .01$) but no significant change for grade four. For the TASC, the main effect for pre-post scores was significant ($p < .001$). A significant ($p < .001$) pre-post result was shown on the WPBIC. The relaxation group was shown to be significantly different ($p < .05$) than the attention group. The decrease in the Relaxation group on the Withdrawal, Distractability and Maturity scales on the WPBIC versus increase in those scales in the Attention and Control groups was significant ($p < .05$).

The effects of relaxation training on anxious fourth grade students was investigated by Proeger (1979). Children were selected from nine schools, based on a counselor administered screening instrument developed for this study: the Anxiety Identification Scale (AID). A total of 135 children from the nine schools were divided into three groups per school: each group consisting of five students. The three groups were: (1) deep muscle relaxation (DMR) treatment group, (2) placebo group; and (3) control group. Treatment groups met twice per week for five weeks, totalling ten sessions. All subjects were pre and post tested with the Children's Manifest Anxiety Scale; a Feelings

Checklist; and the Reading subtest of the Metropolitan Achievement Test (MAT). Teachers evaluated the children with the Walker Problem Behavior Identification Checklist (WPBIC). The results indicated there was no significant difference between the groups. The DMR group tended to have a more positive outcome: which was supported by teachers, counselors, children, and parents.

The purpose of Wright's (1977) study was to assess the effects of relaxation training on discipline referrals among fifth and sixth grade students. Fifty-eight participants were selected on the basis of previous history regarding discipline referrals. They were divided into three groups: (1) experimental relaxation training; (2) control pseudo-treatment; and (3) control no-treatment. The treatment and pseudo-treatment groups met daily for four weeks. A recorded fifteen minute relaxation treatment was used for the experimental group, a recorded revised treatment was used for the pseudo-treatment group. All subjects were pre and post tested with the Spillberger State-Trait Anxiety Inventory for Children. Teacher ratings were measured by the School Behavior Checklist. The results indicated that relaxation training did not significantly reduce the frequency of discipline referrals among the treatment group.

Rossman and Kahnweiher (1977) describe a program of relaxation training designed to increase the tension-coping capacity of fourth and fifth grade students: The study included eight volunteer students. The program incorporated passive and active movement in each session, and consisted of: breathing and sense centering; movement; and deep relaxation and imagery. The goals of the program were: body awareness; acquiring a repertoire of exercises to reduce body tension; and the

ability to distinguish between tension and relaxation. An informal behavioral rating scale was used for pre-post comparison, plus self-reporting. The frequency of physical reaction to stress appeared to deminish.

The purpose of Brown's (1977) study was to evaluate Progressive Relaxation (Jacobson, 1938) as a treatment method for hyperkinesis. Twenty young, and twenty old subjects were selected and randomly assigned to one of four treatment groups: (1) systematic relaxation training plus specific Task Motivational Instructions (TMI); (2) systematic relaxation only; (3) attention placebo, and (4) no treatment controls. Treatment procedures were administered in twelve sessions over a four week duration. All subjects were pre and post tested with the David's Rating Scale for Hyperkinesis, the Piers-Harris Self-Concept Scale, and three WISC-R subtests. The Conner's Scale and the Inferred Self-Concept Scale were completed by teachers as a post test only. On the David's Scales the relaxation plus TMI subjects achieved significantly more positive scores, with older childrens scores responsible for the effects. Piers-Harris results showed the relaxation plus TMI group obtaining significantly more positive self-concept measures than the other groups. Neither the WISC-R or the teachers ratings reflected significant results.

Based on the findings of a pilot study, Lupin, Braud, Braud and Duer (1976) conducted a study using deep muscle relaxation followed by a story series to determine their effects upon hyperactivity. In the pilot study a six year old boy had been treated successfully for hyperactivity using biofeedback equipment. Over a period of eleven sessions the child had learned to control attention and activity levels

on command and reduced psychosomatic symptomatalogy (headaches, allergies, asthma, and runny nose). A follow-up session seven months later showed the child still had control but behavior was erratic, because teachers and parents had failed to establish firmly the transfer of the technique to everday situations. Since biofeedback equipment could not be used at home the following study was designed to teach children deep muscle relaxation with a series of relaxation and story tapes.

The children in the study were from minimal brain-injured (MBI) classes in three schools. Thirteen teacher referred students (age 6 - 10), who had behavioral problems severe enough to hinder classroom performance, participated in the study. Parents and students participated daily, for 20 minutes per evening, for a period of three months. The treatment program consisted of six comercially prepared tapes for parents and six tapes for children. All tapes were designed to reduce anxiety associated with children's negative behavior: they used relaxation exercises and stories which employed visualization and imagery. The adult tapes included behavior modification principles, so that parents could become aware of how to reinforce their child's new positive behavior. Pre-post evaluation included: a parent behavioral rating scale; WISC subtests (coding, digit span, and object assembly); Visual Sequential Memory for the Illinois Test of Psycholinguistic Abilities (ITPA); pre-post classroom behavior was observed and recorded by graduate students. Plus, parents kept daily records as to whether or not their child listened to the tapes at home.

Results showed: significant improvement on WISC, digit span ($p < .05$), coding ($p < .025$); approached significance ($p < .10$) on Object

Assembly; no significance on Visual Sequential Memory (ITPA). Graduate student observations indicated: a greater degree of positive peer group interaction; and significant improvement ($p < .01$) regarding working on assigned tasks, communication with other children with permission, and fighting or nervous behaviors. Improvements recorded by parents were: appeared happier, and improved interpersonal relations. One child had a complete reduction in medication. Those children who listened to the tapes most frequently made more improvement on the parent behavioral scale (all children were asked to listen to the tapes 70 times: actual times ranged from 20 - 68). The author's feel that to achieve optimum degree of effectiveness, parents should receive relaxation training also.

The Treatment Programs

Peace Harmony and Awareness, and Kiddie QR are both stress management programs for children, designed to reduce the effects of tension and stress in children, and lead to more positive feelings about 'self'. Both programs use relaxation of the striate muscles with emphasis on the facial muscles; guided visualization and imagery for suggestions of warmth to relax the visceral muscles; positive self-talk; and smooth rhythemic breathing, to create change.

Stroebel (1978) has stated that it is approximately grade two or three when stress related symptoms begin to appear. Stroebel (1980) suggests, look for body cues such as clinching fists, tightening of shoulders, clenching teeth and so forth: tension often assumes an unconscious normality.

Both programs are suitable for use with biofeedback equipment, but seek to enhance awareness of unconscious muscle tension without

expensive instrumentation.

Peace Harmony and Awareness

Peace Harmony and Awareness, a relaxation program for children, was developed by Lupin (1977) as a response to the successful results achieved by its forerunner 'The Family Program for Peace Harmony and Awareness'. Teachers and other school personnel wanted these materials in a form that was suitable for classroom use. In the classroom edition the existing tapes were revised and expanded. Two new tapes were included for the teachers relaxation with emphasis on the classroom setting and their interaction with the children.

The Peace Harmony and Awareness program is designed to reduce tension and improve the child's self concept. It also allows children to develop a 'stopping technique' - take a deep breath and relax. It is a way to help children when they experience stress.

Children who are angry and tense often lack self-confidence, exhibit behavior problems and learning disabilities and are sometimes hyperactive. Helping these children depends on their becoming aware of body tension. Relaxation is important in the development of self-control: It can reduce anxiety, and impulsive, hurried careless behavior. As the children learn to have more control over their bodies, and as negative behaviors decrease, often interpersonal skills increase which leads to increased self-esteem and self-confidence. These effects are in turn a reinforcer for the new skills and feelings. Relaxation helps develop coping skills that may have classroom benefits such as increased attention span and less absenteeism.

Peace Harmony and Awareness encourages the use of positive self-talk and helps the child view himself in a more positive way, while

decreasing negative attitudes. For example, positive self-talk includes such statements as: Yes I can; When I stay calm and relax, I do all things better. Lupin states, "positive self-talk can be instrumental in helping people change their self-image" (p.6). Lupin suggests that for best results the ideal time to use self-talk to change self-image is immediately after the use of the relaxation tapes: "positive self-talk done in a deeply relaxed state leaves a stronger impression upon the more subconscious feeling level of the mind, rather than the intellectual, reasoning level" (p.6).

The first tape of the Peace Harmony and Awareness program is designed to teach awareness of skeletal muscle tension, by experiencing and contracting muscle tension and relaxation: Progressive Relaxation (Jacobson, 1938). This tape is practiced several times, until the children know how to relax their muscles. The second tape teaches 'slow relax': children learn to relax in everyday situations by taking a deep breath and letting go of tension. The children learn that they can do this slow relax frequently throughout the day in many situations: It is a form of differential relaxation (Jacobson, 1938). Lupin suggests that the children use the word 'relax' or 'take a deep breath' as cue words to use when they are upset. The remaining eight tapes teach children how to cope more effectively with stress and enhances their self-concept through the use of eight fantasy stories set against peaceful relaxing backgrounds: the mountains, beach, forest and a trip to the stars.

The tapes use imagery (of all sense modalities) as a means of presenting positve attitudes and more appropriate behavior. Lupin has said that children are often expected to use positive behavior that

they have never had the opportunity to practice. Visualization allows children to practice new behaviors in a non defensive way and to experience their responses in their imagination. The ability to fantasize and imagine enriches a person's inner life, and negative behavior is decreased. Lupin cites Singer's findings "that fantasy may play an important role in the healthy development of the individual" (p.5). Singer concludes, "fantasies and daydreams, far from being irrelevant and insubstantial, may be the foundation of serenity and purpose in our lives" (p.5).

The fantasy tapes instruct the children to relax and then listen to the story that follows. The stories are to be presented in sequence and daily, until the series has been heard three times. It is then suggested that the children be allowed time daily to listen to the tapes of their choice in a quiet place. Lupin notes that often children have a favourite story which they choose frequently: in which case the concept being discussed is probably one that the child needs to deal with, or is dealing with on a conscious or unconscious level. Lupin suggests that the children should have time to discuss the stories and their feelings afterwards: follow up activities are suggested.

There are two teachers tapes in the classroom series of the Peace Harmony and Awareness program. They teach awareness of states of tension versus states of relaxation, develop a positive attitude with regards to teaching and towards students, and create an inner calm. These tapes are suitable for use with parents also. For maximum benefit teacher, parents and children should be exposed to the program, to help eliminate the negative cycle of interaction: children often respond negatively when parents and teachers are under stress. Teachers and

parents can use the cue word or phrase and remind the child to relax when appropriate. Pupils learn better in a calm atmosphere: the same can be said of teachers, they work better in a calm atmosphere.

Lupin has stated that the Peace Harmony and Awareness program is suitable for children from grades one to nine; it can be used both individually and in groups. The program is easy to teach, and the lessons are short. Lupin states that the program has been used successfully by family counselors and child psychologists in private practice; mental health clinics; treatment centers for mentally retarded, and emotionally disturbed; juvenile detention homes; by counselors, regular and special education teachers; and parents. Lupin also states that if the concepts are to generalize to everyday situations it is 'absolutely necessary' that a reinforcement plan be set up to modify behavior.

Lupin recommends that the school counselor work individually or in small groups with children who continue to interupt the group because of a short attention span, or those who cannot relax. Hyperactive children may require one to one instruction before joining the small group sessions. These children can then join the whole group when ready: all children are accommodated.

Lupin notes that some changes should be noticed after two to three weeks of using the program, if it is used as directed and reinforced. Behavior changes may be small initially. Behavior changes desired in specific situations may require reminding the child to relax at a critical time.

Lupin reports changes such as reduced hyperactivity, reduction in psychosomatic stomach aches, increased self-confidence, behavior

problems lessened, and improved creative story writing as a result of using the Peace Harmony and Awareness program.

Kiddie QR

Stroebel (1980) discovered the Quieting Reflex (QR) in 1974 as an outgrowth of his work using biofeedback to train the Quieting Response (Stroebel's term for deep relaxation), and thus treat stress related disorders. Stroebel has stated that if the Quieting Response is practiced regularly for four to six months, it will become a reflex: hence the name Quieting Reflex. Once learned practice makes it automatic. Initially the Quieting Reflex was designed to help adults: "After six months practice, QR remarkably improved their ability to avoid and eliminate stress illnesses" (p.2).

Stroebel describes Kiddie QR as preventive health care for youngsters: a basic health care model for life. The Stroebel's suggest a fourth 'R' should be added to children's education: reading, writing, arithmetic, and 'QR'. They state, "QR is an important life skill just like brushing one's teeth" (p.3).

Stroebel believes that Kiddie QR provides the 'how' of self-regulation in a format that is especially appealing to young children. It is a program based on sound principles of physiology, and uses 'body friends' to focus on those body parts which are involved in the stress mechanism. Stroebel has said "the well intended encourage us to 'just relax'...and in working so hard to 'must relax' we increase our anxiety and feel worse" (p.9). Some children (and adults) have their inner world stuck in passing gear and they don't know how to get out of it: passing gear is useful in a tight spot, but inappropriate if used continuously. Kiddie QR teaches children how to 'shift gears' in times

of stress. QR diffuses resentment and fear on the spot: it does not solve the problem but allows a 'calm body and alert mind' to deal with any situation. Stroebel states "the six-second QR is immediate....its faster than popping a pill or pouring a drink!", (p.10) and can be used any time and any place. Because QR is a mini-relaxation response it can be used frequently throughout the day, more specifically at the scene of the stress, to restore homeostasis.

The Kiddie QR program teaches body awareness and helps children differentiate between appropriate and inappropriate stress. Inappropriate stress reduces school and work performance and can produce serious illness. Kiddie QR enhances healthiness and leads to 'my very own good feeling self'. QR compliance (sticking with what you are doing) is high because it does not impose on time, as traditional relaxation programs do. Stroebel notes "it feels good to be in control of yourself....you cannot overdose on QR" (p.16). Core transference (carry over effect) is also high because once learned QR becomes a reflex that goes with you always, to be used automatically and unconsciously at the moment of stress: it becomes a life long coping skill.

In a panic or upsetting situation children often play the game 'freeze' which throws all the musculature into a bracing posture. Tense muscles produce tired minds, and vice versa: thus starting a viscious circle. Many youngsters learn to activate the fight-or-flight response at the slightest sign, and this low keyed panic reaction prevents appropriate performance. The Quieting Reflex is designed to interupt the fight-or-flight response in the first six seconds, 'before' it develops.

The emergency reaction (fight-or-flight) involves approximately five steps: (1) increased vigilance towards the cue - an orienting response with increased sympathetic outflow, (2) tensing of the muscles, especially the face, (3) at about three seconds into the response there is a catching or holding of the breath, or shallow quick breathing (panting), (4) peripheral vasoconstriction (hands and feet cool and may become clammy), (5) and finally the jaw is clenched.

The Quieting Reflex is a reversal of the above steps: (1) increased vigilance towards the cue, (2) initiation of the 'sparkle right - sparkle left - sparkle smile' activity, which takes the tightness off the smile muscles, (3) take a deep breath, through magic breathing holes in the feet (to encourage abdominal breathing), (4) relax jaw muscles, and (5) exhale, through the magic breathing holes (allowing a downward flow of body energy). Steps 4 and 5 are to be performed almost simultaneously.

The physiological changes initiated by the emergency response and the contrary response of the Quieting Reflex can be measured by biofeedback instruments in a laboratory. Actual body measurements in Stroebel's laboratory showed that when a child is asked a question, by parent or teacher, that is difficult for him to answer, most young people have a quick panic reaction lasting six to ten seconds: which reduces their ability to perform even though they may know the answer. Many youngsters maintain a high level of arousal more often and longer than is necessary. Kiddie QR trains young people to recover homeostasis quickly; thus saving the fight-or-flight response for true emergencies.

Kiddie QR teaches children to gear up or gear down. Stroebel notes, "In the face of an annoyance, the very young child can learn

what situations require 'full gear ahead' and what situations require 'less' energy" (p.17).

Kiddie QR can be used by parents, teachers, therapists, dentist, and doctors. It is designed to appeal to young children, age three to nine, but is also suitable for the physically handicapped, emotionally disturbed, and even geriatric populations functioning mentally at this age level. Stroebel's have said that Kiddie QR is suitable for anyone: even 'adult kids'. They recommended that parents and teachers participate with the child: we have to be good to ourselves before we can be good to others. Parents, teachers, and children communicate their tension to one another and intensify the problem; QR has a calming effect.

Stroebel notes that it takes a long time to run our bodies down. Sufficient time should be given to preventive and corrective measures. As important as time is consistancy.

The Instruments

The Revised Children's Manifest Anxiety Scale

Reynolds and Richmond (1978) substantially revised the Children's Manifest Anxiety Scale (CMAS), first published by Castaneda, McCandless and Palermo in 1956. The resulting manifest anxiety scale was renamed "What I think and Feel" (WITF), and is said to measure chronic, manifest anxiety independent of state or situational anxiety.

The scale was revised, (1) because teachers wanted a scale suitable for use down to the grade one level, (2) to shorten, and lessen administration time, and (3) to meet current psychometric standards. A 73 item draft was administered to 329 students from grades

one to twelve; 28 anxiety items were retained along with nine of the lie items. A second group of 167 students from grades 2, 5, 9, 10 and 11 were then tested with the new instrument to cross-validate reliability; the reliability estimate was .85. The overall trend was for anxiety to decrease with age. No sex differences were obtained on the lie scale, but significant grade and race differences appeared; black children and young children tended to score higher. Grade one children scored significantly higher on anxiety items, and Reynolds and Richmond believe that with young children this may be a reflection of social desirability. It is suggested that scores within one SD of the mean at the appropriate grade level be taken to indicate scoring within the normal range of variability. Mean and SD tables are provided for grades one to twelve (Reynolds & Richmond, 1978).

In the interest of establishing readability levels, all items were submitted to a group of reading specialists who advised that readability was at a grade three reading level: an average grade three reader would be able to read it alone, and it could be read to grades one and two children. Directions were simple even for young children, and required only that they circle YES if the statement was true about them, and NO if it was not true about them. Reynolds and Richmond believe the resulting scale is useful for children from grade one to twelve.

Content validity was assumed (Reynolds & Richmond, 1978) because the items were taken from a previously established test (CMAS). The new scale, What I Think and Feel, was factor analyzed. Three factors emerged, supporting current multidimensional theories of anxiety (Reynolds & Richmond, 1979; Spielberger, 1972), and supporting

construct validity of the new scale.

The three anxiety factors were: (1) Physiological Anxiety, (2) Worry and Oversensitivity, and (3) Fear and Concentration Anxiety. Support for the factors was obtained in a nationwide standardization of the instrument, on a sample of 4,972 children between the ages of 6 - 19 years (Reynolds & Paget, 1981). In addition to the three anxiety factors a large general anxiety factor was revealed, supporting the presence of a large general anxiety factor in the measurement of chronic, manifest anxiety. The lie scale separated into two factors; those that stated 'I always' and those that stated 'I never'.

The construct validity of the RCMAS was further supported by concurrent administration of the instrument along with Speilberger's (1973) State-Trait Anxiety Inventory for Children (STAIC), in a perfectly counterbalanced design (Reynolds, 1980). The STAIC was chosen for comparison because of substantial research evidence supporting its validity; plus the original CMAS was derived from an older instrument (Taylor's Manifest Anxiety Scale, 1953) based on trait theory of anxiety; and the fact that the revised form (RCMAS) is considered to measure trait anxiety. Forty-two children (26 males, 16 females; aged 6 - 16 years), who had been referred for psychological evaluations to a private practice, were involved in the study. A high correlation (.85, p .001) was observed between the RCMAS and trait anxiety on the STAIC; no significant correlation occurred with state anxiety. The study provides considerable support for the construct validity of the RCMAS as a measure of chronic, manifest anxiety, independent of state or situational anxiety. The magnitude of the correlation suggests that the two scales may be used as alternate forms of measures, involving

studies with pre-post test design.

The test was extended downward in 1980 (Reynolds, Bradley, & Steele) for use with kindergarten children. A sample of 97 children were administered the WITF orally, either individually or in small groups, using the standard directions. Reliability estimates were .82 and compare favourably with the .85 reported for the test development sample (Reynolds & Richmond, 1978), and .85 in a cross-validation study. No sex differences occurred in the anxiety scale with kindergarten children, but kindergarten children tended to score high when compared to other children. The reliability estimate of .82 suggests that the WITF may be useful with preschoolers, for individual assessment, or group screening for potential learning/behavior problems, by both school psychologists and clinicians.

Because of the high scores on both the anxiety and lie scales with young children, Reynolds and Bradley (1980) have stated that scores for young children should be seen as suggestive rather than diagnostic. Reynolds and Richmond (1978) state a similar caution for children in grades one and two.

The Culture-Free Self-Esteem Inventories

The development and standardization of the Battle (1981) Culture-Free Self-Esteem Inventories for children and adults were the result of more than thirty studies conducted over a six year period. Battle considers the inventories to be both reliable and valid measures of self-esteem. All but one inventory are self-report scales, developed in the course of work with students and clients.

The children's scales were standardized on boys and girls in grades three through nine, and can be used successfully with senior

high school pupils. Oral, and individual or small group, administration is recommended for children in grades one and two, nonreaders, and handicapped clients. Children in grade three and above, with average reading skills, should be able to read and follow the directions.

The children's inventories (Forms A and B) were intended to measure four areas of self-esteem: (1) general (self-related); (2) social (peer-related); (3) academic (school-related); and (4) parents (home-related). These, totalled, will give a total self-esteem. The inventories contain an additional scale, a lie scale designed to measure defensiveness. The items in the scale were selected from Coopersmith's (1967) Self-Esteem Inventory, Gough's (1965) Adjective Checklist, plus those developed by Battle (Battle, 1976). They are the most discriminating items from a pool of 150. Self-esteem items are divided into two groups; those which indicate high self-esteem and those which indicate low self-esteem. The child checks either a yes or no answer for each item, and the self-esteem score is the total number of items checked which indicate high self-esteem. Mean scores, SD, and test-retest correlations are provided for grades three through nine.

Form A of the children's inventory is a 60 item test, with 10 items designed to measure defensiveness (lie scale), and 50 items intended to measure the four areas of self-esteem. Form B has the same subscales as Form A, but contains only half the items (30). These items were taken from Form A, and provide a shorter version when desired. A correlational study (N = 160) of Forms A and B indicate a correlation of .86.

Test-retest reliability, over a 48 hour period, was established for both Forms A and B, with children from the Edmonton Public School

System. Test-retest studies of Form A were conducted with 198 boys and girls enrolled in grades three through six; test-retest correlation was .84. Test-retest correlations of Form A for a Junior High sample of 117 was .91. The test-retest reliability of Form B was established using 110 boys and girls enrolled in grades three through six; test-retest corrleations were .84. These results indicate that the instrument has acceptable test-retest stability.

Battle has stated that content validity was built into the inventories by (1) developing a construct definition of self-esteem, and (2) by writing items intended to cover all areas of the construct. Battle's construct definition of self-esteem is "the perception the individual possesses of his own worth" (Battle, 1981, p.14). Battle believes "an individual's perception of self develops gradually and becomes more differentiated as he matures and interacts with significant others. Perception of self-worth, once established, tends to be fairly stable and resistant to change" (p.14). Concurrent validity was established in a comparative study of the Culture-Free SEI for children (Form A) and Coopersmith's (1967) Self-Esteem Inventory, with 198 children in grades three through six; correlations ranged from .71 to .82. The Culture-Free SEI also correlates favorably with Beck's Depression Inventory, and the Minnesota Multiphasic Personality Inventory (MMPI) (Battle, 1981).

Battle uses the childrens and adult scales routinely in his work as a school counselor and psychologist, and has found them to be effective measures of affective mood states as well as reliable measures of self-worth. The scales allow psychologists to identify the area of difficulty for a child (eg. home, school or interpersonal

skills) thus, the therapeutic program can be planned accordingly. Battle also uses the results derived from the scores to assist in decision making regarding special class placement, and whether to continue or discontinue counseling sessions. Depressed individuals have low self-esteem (Battle, 1978): In therapy as they improve, self-esteem improves. Battle believes the scales provide a reliable measure of change resulting from therapeutic intervention. Support for this position is provided in a three year longitudinal study of the effects of special class placement on self-esteem (Battle, 1981). The scale may also be used as a screening device to identify children who may need some form of psychological intervention.

CHAPTER IV

PROCEDURE AND DESIGN

The Study

This study was based on the premise that there are children within any school system who could benefit from a program designed to help children deal with the everyday stresses in their lives, both from a preventive and a corrective perspective. The study explored the effects of two stress management programs, Peace Harmony and Awareness, and Kiddie QR, to access their possible value as part of a counseling and/or affective health program within the schools; plus determine if the two programs were comparable in achieving their goals with elementary school children. A subsidiary purpose was to determine if there is a relationship between manifest anxiety and self-esteem.

The Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory were used as both pre and post treatment measures. Changes in scores were seen as suggestive of changing attitude. To insure consistency, all pre and post evaluations and treatment programs were administered by the experimenter.

The Treatment Programs

Peace Harmony and Awareness is a relaxation program for children, whereas Kiddie QR is a program designed to help children 'shift gears' in times of stress. Both programs use relaxation and/or visualization and imagery to reduce the effects of stress and lead towards more positive feelings about 'self'.

The Instruments

The children were evaluated both pre and post treatment with the Revised Children's Manifest Anxiety Scale (RCMAS: Reynolds & Richmond, 1978), and the Culture-Free Self-Esteem Inventory (SEI: Battle, 1980). Both instruments were chosen because of their shortness and simple answer selection: Answers required a yes/no choice. Ease of administration was considered important because of the young age of the children involved. The Revised Children's Manifest Anxiety Scale measures chronic manifest anxiety, independent of state or situational anxiety. The Culture-Free Self-Esteem Inventory measures the individual's perception of his own worth.

RCMAS. Reynolds and Richmond (1978) substantially revised the Children's Manifest Anxiety Scale (CMAS) which was published in 1956 by Castaneda, McCandless and Palermo. A 73 item draft was administered to 329 children from grades one to twelve: 28 anxiety items were retained, plus nine, of the original eleven, lie scale items. A cross - validation sample of 167 students from grades 2, 5, 9, 10 and 11, produced a reliability of .85. Young children tended to score higher on anxiety items, which Reynolds and Richmond believe may reflect social desirability: They also tended to score high on the lie scale. For these reasons, Reynolds and Richmond believe the scores for young children should be seen as suggestive rather than diagnostic. Content validity of the new scale was assumed because the items were taken from a previously established test. Construct validity was supported by concurrent administration of the scale along with the State-Trait Anxiety Inventory for Children (STAIC: Spielberger, 1973) to a group of 42 children: A large correlation occurred (.85) between the Revised

CMAS and the STAIC trait scale (Reynolds, 1980).

A nationwide standardization, consisting of a sample of 4,972 children between the ages of 6 and 19 years, revealed three anxiety factors, a large general anxiety factor, plus two lie factors; thus, further supporting construct validity.

SEI. The Self-Esteem Inventories for children has two forms: Form A, a sixty item test; and Form B, a shorter version, which has thirty items taken from the Form A test. All items on Form A were chosen from a pool of 150 items. Test-retest reliability over a 48 hour period was established for both Forms A (N = 198) and B (N = 110) with children from grades three to six of the Edmonton Public School System. The test-retest reliability in both cases was .84. A correlational study (N = 160) conducted with Forms A and B revealed a correlation of .86. Battle has said that content validity was built into the tests by (1) establishing a construct definition of self-esteem, and (2) by writing items intended to cover all areas of the construct. Concurrent validity was established in a comparative study of the Culture-Free SEI for children (Form A) and Coopersmith's (1967) Self-Esteem Inventory (N = 198; grades 3 to 6); correlations ranged from .71 to .82 (Battle, 1980).

The Sample

During the months of January and February thirty-six grade two children (24 boys, 12 girls) from an elementary school in the Edmonton Public School System participated in the study. The children's ages ranged from six to eight years.

A letter was sent to the parents (Appendix E) of all the children in both grade two classrooms giving a brief explanation of the study and requesting permission for their child's participation in the study.

Only those children who received permission participated.

Research Design

The research included two treatment groups plus a control group. All subjects from each classroom were matched by sex and randomly assigned to one of the three groups. Each group consisted of twelve students (8 boys, 4 girls). Treatment group one was exposed to the Peace Harmony and Awareness program, and treatment group two was exposed to the Kiddie QR program. The control group received no treatment. All three groups were evaluated both pre and post treatment with both the Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory.

Procedure

Prior to the Study

Approximately three weeks prior to commencement of the study the experimenter visited both the grade two classrooms involved. I introduced myself as a lady from the University of Alberta and explained that I was wondering if little kids have worries. After receiving a unanimous 'yes' response from both classrooms, I asked if they would be willing to tell me some of the things little kids worry about. Their worries included the following:

I worry about:

- getting lost in a big store -- like a mall
- when my parents aren't home at night, when I'm alone -- I wonder when they'll come
- going to the Doctor's -- wonder about what he'll do
- getting picked up (based on this child's past experience)
- strangers -- I might be taken away

- getting beat up, hurt, on the way to and from school
- being a poor reader (it doesn't feel very good)
- Mom and Dad might go away and never come back
- if my friends will like me
- accidents
- miss school bus and be late -- sent to the office; trouble

Facilities

All pre and post tests, and treatments were conducted within the school in an unused classroom. During the treatment sessions the children either sat or lay on the carpeted floor as was appropriate for their particular session. Soft light was provided so the children lying on the floor did not have to look up into overhead lights.

Instrumentation

Both instruments, the Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventories, were administered for both pre and post evaluations. Pretests were completed during two days immediately prior to commencement of the treatment, and post tests were completed during two days immediately after treatment was completed. The children were tested in small groups of approximately seven to nine students at one time. Both instruments were read orally to the students. The original directions of both instruments were followed, but each was preceded with: "I will read the sentence to you - listen carefully". The rest of the directions indicated they were to circle their yes/no choice answer (Appendix A and B). Directions were reviewed frequently throughout the test sessions.

Pre tests were not marked until the experiment and post tests had

been completed to avoid their influence on the experiment.

Treatment

The treatment lessons were taught twice per week. Each program had a total of sixteen lessons. Both treatment programs were presented on taped cassettes by their respective authors to ensure consistency in presentation.

Peace Harmony and Awareness. The 'Basic Relaxation Exercise' of Peace Harmony and Awareness was used for lessons one to six. This presentation consisted of muscle relaxation similar to that of Jacobson's Progressive Relaxation (1938) and required the children to lie on their backs on the floor. The 'Slow Relax' exercise, which is to be used in everyday situations, was used for lessons seven and eight. This presentation required the children to sit on a child size chair, feet touching the floor. During the 'Fantasy Stories' (lessons nine to sixteen) the children were allowed their choice of sitting or lying down, were instructed to relax as in lessons one to eight, and to listen to the story presented. Themes for each story can be found in Appendix C. They generally focused on ideas of: self-power, yes I can, old me-new me, etc.

The Peace Harmony and Awareness program has two tapes to be used by the teachers before the children began their program. The two teachers tapes were not taught to the classroom teachers, because both the Kiddie QR and the Control groups were with the teachers daily. For purposes of this study 'teacher' during treatment was considered to be the experimenter.

Kiddie QR. The Kiddie QR lessons were taught with the children sitting on the floor in a semi-circle facing the experimenter. They

listened to the taped story presentation and the tape was stopped when indicated for student feedback and for the children to practice the concept being taught; eg. the Sparkle, warm quiet breathing, QR, Magic Jaw String, etc. Themes for the sixteen lessons can be found in Appendix D.

Follow-up

The classroom teachers involved were provided with access to both treatment programs after completion of the study. Arrangements were made for the teachers to continue to reinforce the skills to enhance acquisition and transference. They were also introduced to the two teachers relaxation tapes that accompanied Peace Harmony and Awareness.

Delayed Treatment for the Controls

The control group continued with their regular timetable throughout the study, which included Sustained Silent Reading, Art, and a time to complete daily Language Arts assignments. Arrangements were made for them to be exposed to one of the treatments after completion of the study. Follow-up by the teachers would include all three groups.

Teacher and Parent Evaluations

Teacher evaluation. Teacher ratings were kept informal to eliminate imposing an extra workload on them. After the study was completed the teachers reported any noticeable behavior changes (Appendix G).

Parental questionnaires. Letters were sent to the parents (Appendix F) enquiring as to whether or not they felt there had been any noticeable changes in their child's behavior.

eg. Changes regarding:

- less fighting with brothers and sisters
- seems happier
- improved attitude toward school
- seems less nervous and/or less irritable
- etc.

Limitations and Assumptions

1. Both treatment programs were designed with the intention that the concept being taught be reinforced many times throughout the day to enhance acquisition of the skill and transference. However, that was not possible in this study. In the interest of consistency, the two teachers involved were not included in the treatment and reinforcement processes. Ultimately it was expected that gains under these circumstances might be small, but any gain is a beginning and a step in the right direction. Follow up was provided by the teachers after completion of the study in order to increase reinforcement of the skills and transference.

2. Parental involvement in reinforcement was also excluded from the study in the interest of consistency.

Hypotheses

The following hypotheses were stated:

1. The subjects in experimental group one would show greater gains in self-esteem and lower manifest anxiety than subjects in the control group.

2. The subjects in experimental group two would show greater gains in self-esteem and lower manifest anxiety than subjects in the control group.

3. The gains in experimental group one and experimental group two would be similar.

4. There would be a correlation between self-esteem and manifest anxiety.

Data Analysis

To test the hypothesis mean scores from pre and post tests were calculated and the difference obtained. A one-way ANOVA was used on the difference scores to test for group differences. Also, in order to determine if there was a relationship between manifest anxiety and self-esteem a correlation was computed between total anxiety and total self-esteem at pre test time.

Summary

The effects of two stress management programs for children, Peace Harmony and Awareness, and Kiddie QR, were explored using the Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory as pre-post measures. The sample consisted of thirty-six grade two children from one elementary school in the Edmonton Public School System. The children were randomly divided into two treatment and one control groups. Treatment sessions were held twice weekly for eight weeks.

CHAPTER V

RESULTS

The purpose of this study was to evaluate two stress management programs, Peace Harmony and Awareness, and Kiddie QR, to determine whether or not they are effective and comparable in reducing manifest anxiety and increasing self-esteem in children.

To test the hypotheses, and compare the effects of the two treatment programs, both pre and post mean scores were calculated and the difference obtained for all groups on the Revised Children's Manifest Anxiety Scale (RCMAS) and the Culture-Free Self-Esteem Inventory (SEI). A one-way ANOVA was computed on the difference scores to test for group differences: .05 level of significance was used for all statistical procedures. A correlation was also computed between Total Anxiety and Total Self-Esteem at pre test time to determine whether there was a relationship.

The results of the one-way ANOVA are reported on Table 1 and 2. Mean difference scores for each group for both the RCMAS and the SEI are reported in Table 3.

Hypothesis #1

The subjects in experimental group one would show greater gains in self-esteem and lower manifest anxiety than subjects in the control group.

Findings. Tables 1 and 2 show that there was no significant difference between pre-post mean differences of subjects in treatment

TABLE 1

ANALYSIS OF VARIANCE

- on pre-post mean difference scores -

for: Manifest Anxiety

Source	df	M.S.	F
Between Groups	2	15.75	.69
Within Groups	33	23.01	

p. $>$ .05

TABLE 2

ANALYSIS OF VARIANCE

- on pre-post mean difference scores -

for: Self-Esteem

Source	df	M.S.	F
Between Groups	2	5.44	.47
Within Groups	33	11.68	

p. $>$ .05

TABLE 3

DIFFERENCE SCORES

(between pre and post test means)

Group	Mean	Standard Deviation
Anxiety (total)		
Group I	2.67	6.13
Group II	3.42	4.89
Group III	1.17	2.76
Self-Esteem (total)		
Group I	1.50	3.83
Group II	0.67	2.87
Group III	0.17	3.49

Note: - Group I treatment group - received Peace Harmony and Awareness Program

- Group II treatment group - received Kiddie QR program

- Group III control group - no treatment

group one and the control group with regards to manifest anxiety and self-esteem as measured by the RCMAS and the SEI.

Conclusion. In view of the above findings, Hypothesis #1 was rejected.

Hypothesis #2

The subjects in experimental group two would show greater gains in self-esteem and lower manifest anxiety than subjects in the control group.

Findings. Tables 1 and 2 show that there was no significant difference between pre-post mean differences of subjects in treatment group two and the control group with regards to manifest anxiety and self-esteem as measured by the RCMAS and the SEI.

Conclusion. In view of the above findings, Hypothesis #2 was rejected.

Hypothesis #3

The gains in experimental group one and experimental group two would be similar.

Findings. Tables 1 and 2 show that there were no significant gains in self-esteem or significant decrease in manifest anxiety in either treatment group. Therefore, both groups were similar in that gains were not significant.

Conclusion. Hypothesis #3 was not rejected.

Hypothesis #4

There would be a correlation between self-esteem and manifest anxiety.

Findings. A correlation computed between total manifest anxiety

and total self-esteem on all groups at pre test time, showed a negative correlation of -.73. A reverse correlation shows that as manifest anxiety increases self-esteem decreases.

Conclusion. Hypothesis #4 was not rejected.

Summary of Results

To test the hypotheses (that the two treatment groups would show greater gains in self-esteem and greater reduction in manifest anxiety than the controls) mean scores from pre and post tests were calculated and the difference obtained for all three groups. The difference in the pre-post mean scores were in the expected direction for the treatment groups. However, a one-way ANOVA computed on the differences showed the changes were not significant.

CHAPTER VI

DISCUSSION AND IMPLICATIONS

The Study

The purpose of this study was to explore the effects of two stress management programs for children, Peace Harmony and Awareness, and Kiddie QR, to determine their value as a counseling and/or affective health program within the schools.

Thirty-six grade two children from one elementary school in the Edmonton Public School System participated in the study. The children were randomly divided into two treatment plus a control group. All groups were pre and post tested with the Revised Children's Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory to assess the effects of treatment.

It was hypothesized that: the two treatment groups would show greater gains in self-esteem and lower manifest anxiety than the controls; both treatment groups would make similar gains; and there would be a relationship between manifest anxiety and self-esteem.

A negative relationship between manifest anxiety and self-esteem was confirmed by data analysis. A one-way ANOVA computed on the mean differences (pre-post mean differences) indicated there was no significant difference between groups (Table 1 and 2).

Discussion

Treatment programs. Significant differences favouring the treatment groups were not found as measured by the Revised Children's

Manifest Anxiety Scale and the Culture-Free Self-Esteem Inventory. However, changes in means were in the expected direction. Further research over an extended period of time in conjunction with a reinforcement plan to aid transference is warranted with both treatment programs.

Both Lupin (1977) and Stroebel (1980) have stated that sufficient time must be given to the programs, for maximum results. Lupin has said "Don't get discouraged if you don't see any results right away. At first these changes will be small and may often go unnoticed" (p.16). Lupin suggests parents and teachers should be taught how to reinforce new positive behaviors and that reinforcement is necessary for the concepts to generalize to everyday situations. Both Stroebel and Lupin believe that parents and teachers should participate in the programs with the children. Lupin, Braud, Braud and Duer (1976) obtained significant results with their pilot study of the taped program which included up to 70 hours of listening to the taped program plus parent supported reinforcement. They state of their study, "The data indicated that children who listened to the tapes more frequently made more improvement on the parent behavioral scale" (p.111).

Studies in the literature reveal that relaxation therapy has been used as remediation for such problems as anxiety, hyperactivity, behavior problems and reading achievement. Results vary from significant to not significant: Vacc and Greenleaf (1980) found no significant results when treating problem behavior; Wright (1977) found no significant reduction in discipline referrals; Proeger (1979) found no significant reduction in anxiety, although teachers, counsellors and parents reported a more positive outcome; Rossman and Kahnweiler (1977)

report stress appeared to diminish; Brown (1977) found significant changes in self-concept as measured by the Piers-Harris Self-Concept Scale; and Sullivan (1980) reported significant changes in test anxiety and behavior and both significant and no significant changes in reading achievement. Lupin (1977) suggests that reduced anxiety as a result of relaxation will be reflected in academic and behavioral activities.

Traditional relaxation implies that there will be changes within the autonomic nervous system (Jencks, 1977; Payne & Reitano, 1977; Pelletier, 1977; Stoyva, Basmajian (Ed.) 1978). The children in the present study may not have been sufficiently relaxed to produce these autonomic changes from sympathetic to parasympathetic dominance. Since deep relaxation depends on reduction of afferent and efferent impulses (Jacobson, 1938; Schultz & Luthe, 1959) which leads to reduced reticular activating system activity and consequent reduction in autonomic nervous system activity, larger treatment groups (eg. the 12 students per group for this study) may not be suitable for very young children. Younger children may require one to one instruction, or at least very small groups, in order to reduce external stimuli which subsequently influences attention efforts. Whatmore and Kohli (1974) have stated that the influence of attention on levels of arousal is utilized, knowingly or unknowingly, in various forms of meditation and relaxation.

Peace Harmony and Awareness uses traditional relaxation plus positive self-talk whereas the Kiddie QR program teaches children to 'shift gears' in times of stress. Unlike traditional relaxation programs QR does not emphasize a longer time period to practice deep

relaxation, but uses frequent mini six-second relaxations (QR's) throughout the day along with a change of attitude to lead to a balanced body (homeostasis).

The Instruments. Reynolds and Richmond (1978) advise that the scores for very young children on the Revised Children's Manifest Anxiety Scale (RCMAS) should be seen as suggestive rather than diagnostic because of their tendency towards high lie scale scores: which they interpret as a measure of social desirability. A tendency towards high lie scale scores was confirmed in the present study on the lie 1 scale. Lie scale 2 scores were disregarded because the negative statements were not understood by the young children. For example, the statement 'I never lie' frequently brought forth a statement of 'sure I lie', and then they circled a 'yes' answer. The lie scale on the Self-Esteem Inventory (SEI) was disregarded for the same reason. Statements such as 'my parents never get angry at me' were often circled 'yes' and followed with the comment of 'sure my parents get angry at me.'

The Self-Esteem Inventory scores were also viewed as suggestive because the scales were not standardized on grade two children. They were standardized on grades three to nine.

The RCMAS and the SEI probably serve their best purpose as screening devices when used with very young children, as they tended to open up topics of conversation that would be useful to a counselor or therapist (Battle, 1981). For example, the statement 'there are many times when I would like to run away from home' was later brought up by two of the students during treatment sessions. Also, the tests revealed two children who were in need of some sort of therapeutic intervention

(extremely low self-esteem score, and very high anxiety score).

Teacher and Parental Feedback

Teacher. Teacher feedback was kept informal to avoid imposing an extra workload on them. A simple checklist was provided (Appendix G) and the teachers indicated whether or not there had been any noticeable change in the child's behavior.

The teachers written comments on the reverse side of the form indicated that there had been some changes in most of the children but no major change. One teacher thought that one of her students had improved in many areas, and that the children returned to the classroom feeling very relaxed.

Parental Feedback. Letters (Appendix F) were sent to the parents of all children who participated in the study, at its conclusion. Eighteen out of twenty-four parents responded and their checked responses on the form letter are compiled in Appendix F. Comments on the reverse of the letter ranged from 'no change' to 'I feel my child has benefitted from this program'. One parent expressed a concern that the parents had not been included in the program.

Implications for School Use

Teachers and counselors should be aware that to be successful, stress management programs may require teaching on a daily basis for several months (Lupin, Braud, Braud and Duer, 1976). Indeed, they may need to become a fourth 'R': reading, writing, arithmetics, and 'QR' - and/or relaxation - (Stroebel, 1980) to be effective. Such programs also require an adequate reinforcement plan if the concepts are to generalize to everyday situations (Lupin, 1977). These teaching and

reinforcement schedules may be difficult to accommodate in a school setting, therefore teachers and counselors may have to settle for less than optimum results.

To maximize results the school counselor may need to teach the programs in cooperation with the classroom teachers, so teachers can provide reinforcement throughout the day. Added benefits may be noticed if all classrooms within an elementary school were taught stress management. All staff and support staff could receive in-service training and would then be able to reinforce the concepts continuously with follow-up activities such as art, discussions and playground situations.

When teaching all students the stress management programs, there will be those students who are not in need of it: those who already possess high self-esteem and low manifest anxiety. The programs should not be considered inappropriate for these children, as the stories would at least be equivalent to any story used for story-time in an elementary school setting. The concepts put forth in the stories may provide significant incidental learning with carry-over effect for all children.

Teacher referred students and those students who need counseling intervention, as revealed by the Revised Children's Manifest Anxiety Scale and the Self-Esteem Inventory, may require one-to-one teaching with the programs before joining a larger group. Parental involvement should be encouraged with those children requiring extended treatment, to maximize results.

Both the Peace Harmony and Awareness, and Kiddie QR programs are suitable for use with handicapped children.

Implications for Further Research

Further research on the stress management programs, Peace Harmony and Awareness, and Kiddie QR, is warranted and should consider such things as:

1. adequate attendance, daily practice, reinforcement in day to day settings (with both parents and teachers) and follow-up discussions should be part of any further research.

2. Since both programs are suitable for use with biofeedback equipment, such a study to monitor physiological changes may prove beneficial. This additional reinforcement may add to the successful results of some children.

3. A long term study (eg. one school year) should be conducted, and preferably should include all classrooms within one elementary school.

4. Because the programs are both preventive and corrective in nature, a two year follow-up of the study suggested in 3 (above) should show differences when compared to a heterogeneous school population that did not receive treatment.

5. A study could be conducted to determine the effects of the programs when used with emotionally and physically handicapped children.

6. Lupin (1977) and Stroebel (1980) note that children often reflect the anxieties of the adults in their lives; a study could be conducted in which all of a schools staff receive relaxation training and its effects on both staff and students studied.

7. Finally, of importance to Junior and Senior High schools: stress management via self-regulation in the form of relaxation and/or meditation could be introduced, with the aid of biofeedback equipment

for demonstration purposes, in Junior and Senior High School biology or health courses. By understanding the importance of relaxation to everyone's optimal functioning, and that self-regulation is a choice for every individual, much may be done at an early age to alleviate the personal costs attributed to stress. A study with a one or two year follow-up may prove beneficial.

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APPENDIX A

Revised Children's Manifest Anxiety Scale

- Reynolds & Richmond (1978)

Instructions:

Read each question carefully. Put a circle around the word 'yes' if you think it is true about you. Put a circle around the word 'no' if you think it is not true about you.

1. I have trouble making up my mind. (P)
2. I get nervous when things do not go the right way for me. (W/O)
3. Others seem to do things easier than I can. (F/C)
4. I like everyone I know. (L-1)
5. Often I have trouble getting my breath. (P)
6. I worry a lot of the time. (W/O)
7. I am afraid of a lot of things. (F/C)
8. I am always kind. (L-1)
9. I get mad easily. (P)
10. I worry about what my parents will say to me. (W/O)
11. I feel that others do not like the way I do things. (F/C)
12. I always have good manners. (L-1)
13. It is hard for me to get to sleep at night. (P)
14. I worry about what other people think about me. (W/O)
15. I feel alone even when there are people with me. (F/C)
16. I am always good. (L-1)
17. Often I feel sick to my stomach. (P)
18. My feelings get hurt easily. (W/O)
19. My hands feel sweaty. (F/C)
20. I am always nice to everyone. (L-1)

21. I am tired a lot. (P)
22. I worry about what is going to happen. (W/O)
23. Other children are happier than I. (F/C)
24. I tell the truth every single time. (L-1)
25. I have bad dreams. (P)
26. My feelings get hurt easily when I am fussed at. (W/O)
27. I feel someone will tell me I do things the wrong way. (F/C)
28. I never get angry. (L-2)
29. I wake up scared some of the time. (P)
30. I worry when I go to bed at night. (W/O)
31. It is hard for me to keep my mind on my school work. (F/C)
32. I never say things I shouldn't. (L-2)
33. I wiggle in my seat a lot. (P)
34. I am nervous. (W/O)
35. A lot of people are against me. (F/C)
36. I never lie. (L-2)
37. I often worry about something bad happening to me. (W/O)

(P) - Physiological

(W/O) - Worry/Oversensitivity

(F/C) - Fear/Concentration

(L-1) - Lie Factor 1

(L-2) - Lie Factor 2

APPENDIX B

Form B, Key

CULTURE-FREE SEI. FORM B

Name____________________Age____Date of Birth____________

School____________________Today's Date____________

Examiner____________________Total____G____S____A____P____L____

Directions

Please mark each statement in the following way: If the statement describes how you usually feel, make a check mark (✓) in the "yes" column. If the statement does not describe how you usually feel, make a check mark (✓) in the "no" column. Please check only one column (either "yes" or "no") for each of the 30 statements. This is *not* a test, and there are no "right" or "wrong" answers.

			Yes	*No*	
1.	I wish I were younger	1.	☐	☒	G
2.	Boys and girls like to play with me	2.	☒	☐	S
3.	I usually quit when my school work is too hard	3.	☐	☒	A
4.	My parents never get angry at me.	4.	☐	☒	L
5.	I only have a few friends	5.	☐	☒	S
6.	I have lots of fun with my parents	6.	☒	☐	P
7.	I like being a boy / I like being a girl.	7.	☒	☐	G
8.	I am a failure at school.	8.	☐	☒	A
9.	My parents make me feel that I am not good enough	9.	☐	☒	P
10.	I usually fail when I try to do important things	10.	☐	☒	G
11.	I am happy most of the time	11.	☒	☐	G
12.	I have never taken anything that did not belong to me.	12.	☐	☒	L
13.	I often feel ashamed of myself.	13.	☐	☒	G
14.	Most boys and girls play games better than I do	14.	☐	☒	S
15.	I often feel that I am no good at all	15.	☐	☒	G
16.	Most boys and girls are smarter than I am.	16.	☐	☒	A
17.	My parents dislike me because I am not good enough	17.	☐	☒	P
18.	I like everyone I know	18.	☐	☒	L
19.	I am as happy as most boys and girls	19.	☒	☐	G
20.	Most boys and girls are better than I am	20.	☐	☒	G
21.	I like to play with children younger than I am	21.	☐	☒	S
22.	I often feel like quitting school.	22.	☐	☒	A
23.	I can do things as well as other boys and girls	23.	☒	☐	S
24.	I would change many things about myself if I could.	24.	☐	☒	G
25.	There are many times when I would like to run away from home	25.	☐	☒	P
26.	I never worry about anything	26.	☐	☒	L
27.	I always tell the truth	27.	☐	☒	L
28.	My teacher feels that I am not good enough.	28.	☐	☒	A
29.	My parents think I am a failure.	29.	☐	☒	P
30.	I worry a lot.	30.	☐	☒	G

APPENDIX C

AUDIOTAPES WITH CORRESPONDING PHOTOGRAPHS

(Each tape lasts 16 - 18 minutes)

ADULTS' PROGRAMS

Program 1: "Teachers' Relaxation Exercises" (no photograph)—Helps adults identify body tension and learn how to relax tense muscles.

Program 2: "Teachers' Trip to the Beach" (photograph of the beach used for Program 7)—Discusses how teacher relaxation can help produce a sense of inner calm in stressful classroom situations.

CHILDREN'S PROGRAMS

Program 3: "Children's Relaxation Exercises" (no photograph)—Helps the child identify tension by experiencing the contrasting feelings of tension and relaxation.

Program 4: "Slow Relax" (no photograph)—Teaches the child to relax in everyday situations.

Program 5: "Old Me, New Me" (no photograph)—Emphasizes the fact that people can change and that with the use of relaxation techniques children can change for the better.

Program 6:- "Trip to a Star" (photograph of starry sky)—Introduces children to the peacefulness that comes from being in touch with their self-power and inner strength.

Program 7: "Trip to the Beach" (photograph of beach)—Lets children know that they can have control over both their bodies and their states of mind and that they have the ability to choose words to express their feelings.

Program 8: "Walk in the Woods" (photograph of forest scene)—Stresses the importance of cooperation.

Program 9: "Trip to the Mountains" (photograph of mountain)—Accents the importance of self-confidence in everyday life.

Program 10: "Yes I Can, I Know I Can" (photograph of ship with tugboat)—Promotes patience with oneself and the value of approaching new experiences slowly and calmly.

Program 11: "The Secret Place" (photograph of calm pool of water)—Explains the development of inner wisdom and the benefits of learning to trust and use this inner knowledge.

Program 12: "Magic Mountain" (photograph of sunrise)—Teaches children that criticism does not have to make them feel unimportant and worthless.

APPENDIX D

KIDDIE QR SEQUENTIAL ELEMENTS — OVERVIEW

Element	Title	Physiological Response
1	My Friend, QR - Cue: Worry, fear, anger.	"QR Metphor"
2	Finger Houses - Breathing, warmth	B W SS
3	A Finger Trip with QR - Grim face muscles - contrast	M SS
4	QR & Little Fish - Limp jaw. QR Wiggles - Jaw tension contrast	M F SS
5	Magic Breathing Holes - Generalization	M F B W SS G QR
6	Magic Jaw String - Generalization	M F SS G QR
7	Magic Jaw String - Breathing Holes - Generalization	M B F W SS G QR
8	Bubble Pipe - Generalization	M B F W SS G QR
9	Fighty Fists and Finger Balloons - Faulty bracing awareness	M F SS QR
10	QR and Octopus - Flowing muscles and warmth	M B F W SS G QR
11	Octopus & Magic Breathing Fingers - Flowing muscles and warmth	M B F W SS G QR
12	QR The Muscle Man - Muscles and emotional tension	M B F SS G QR
13	QR and Rigid Robot - Tense and relax contrast	M B SS QR
14	QR and Grouchy Face - Generalization - emotions	M B F W SS G QR
15	QR and My Body Cycle	M B F W SS G QR
16	My Very Own Good Feeling Self - Adaptive homeostasis	M B F W SS G QR

B-- Breathing
W-- Warmth
M-- Muscles
F-- Flowing
QR-- Generalization
SS Sparkle Right
Sparkle Left
Sparkle Smile

Quieting Response — Reflex Rationale
A Choice

Emergency Fight / Flight Response or Quieting Reflex

FIRST You receive a cue that creates a fear, worry, anger, or upset

THEN You have a choice. Either the Emergency Fight/Flight Response or The Quieting Reflex*

1. Grim facial muscles
2. Catch breath—or—Hold breath—or— Shallow breath or—Pant
3. Cold Hands, feet
4. Clench teeth —or—other muscles
5. Faulty bracing of emotions, muscles, sour attitude—negative image

1. Inward smile-Sparkle eyes (a suggestion that whatever the situation you can keep your body calm)
2. Quiet, easy breathing Basic rhythm of life
3. Warmth—flowing warmth
4. Limp jaw, body muscles flowing heaviness

*Learn the exact mechanics of doing your Qr in Element 5.

APPENDIX E

Bannerman Elementary School
14112 - 23 Street
Edmonton, Alberta
December 7, 1981

Dear Parent or Guardian:

All of the grade two children at Bannerman Elementary School have been selected as participants in a research project which is jointly supported by the University of Alberta and the Edmonton Public School Board.

The purpose of this project is to teach children practical ways to deal with the everyday stresses of life. They will be taught ways to reduce tension by using relaxation, and/or visualization and imagery.

Please indicate if you would like your child to participate in this project.

I would like my child to participate in this project.

____________________________ Signature of Parent or Guardian

I do not want my child to participate in this project.

____________________________ Signature of Parent or Guardian

For further information concerning this matter please phone Mr. D. Krenz, Vice Principal, at 476 9853.

Sincerely

L. Bristowe

L. Bristowe
Student
University of Alberta

APPENDIX F

Bannerman Elementary School
14112 - 23 Street
Edmonton, Alberta
March 8, 1982

Dear Parent or Guardian:

Your child has participated in a stress management program, which taught him/her practical ways to reduce tension by using relaxation and/or visualization and imagery.

The project is now completed. I would appreciate some indication, from the parents of all the children involved, as to whether or not there has been any noticeable changes in their childs behavior, or habits, at home.

I am listing some areas where you may have noticed changes. If any of these apply to your child would you please put a check (   ) beside them.

less fighting with brothers and sisters (or friends) ____ (5)*

less bed wetting ____

improved sleep habits ____ (5)

seems happier ____ (6)

improved attitude towards school ____ (6)

seems less nervous and/or less irritable ____ (7)

more cooperative ____ (5)

Any additional comments would be welcome; please use the reverse side of this letter for comments.

All replies will be confidential.

Sincerely,

L. Bristowe

L. Bristowe
Student
University of Alberta

Signature of Parent or Guardian: ______________________

* number of parents who responded to the statement

APPENDIX G

TEACHER EVALUATIONS

Comments - use reverse side	Group I						Group II					
	1	2	3	4	5	6	1	2	3	4	5	6
MORE (Personal improvement)												
. improved interpersonal relations			✓	✓	✓	✓	✓	✓	✓	✓	✓	
. seems happier		✓		✓	✓	✓	✓	✓		✓	✓	✓
. more cooperative	✓	✓	✓			✓		✓	✓	✓	✓	✓
. more independent		✓		✓		✓		✓		✓	✓	✓
. accepts criticism better			✓	✓				✓		✓	✓	✓
. seems to have more confidence - seems to feel better about 'self'	✓	✓				✓		✓		✓	✓	✓
MORE (school improvement in:)												
. listening skills (increased attention - less daydreaming)	✓		✓			✓		✓	✓			
. completes assignments				✓				✓	✓		✓	
. learning new tasks	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
. handwriting or drawing									✓			
. increased pride in work						✓	✓	✓		✓	✓	
LESS												
. less fighting with peers		✓	✓	✓	✓	✓				✓	✓	
. seems less nervous	✓		✓	✓	✓		✓	✓		✓	✓	
. less hyperactive	✓	✓					✓		✓		✓	
. less irritability, explosiveness, impulsivity	✓	✓	✓	✓	✓				✓	✓	✓	

TEACHER EVALUATIONS

Comments - use reverse side	Group I						Group II					
	1	2	3	4	5	6	1	2	3	4	5	6
MORE (Personal improvement)												
. improved interpersonal relations				✓								
. seems happier							✓	✓			✓	
. more cooperative		✓										
. more independent						✓		✓	✓			✓
. accepts criticism better		✓						✓			✓	
. seems to have more confidence - seems to feel better about 'self'				✓				✓	✓	✓		
MORE (school improvement in:)												
. listening skills (increased attention - less daydreaming)												
. completes assignments		✓		✓			✓					
. learning new tasks												
. handwriting or drawing									✓			
. increased pride in work				✓				✓	✓			
LESS												
. less fighting with peers												
. seems less nervous												
. less hyperactive												✓
. less irritability, explosiveness, impulsivity					✓							